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Naval Air Engineering Center ltr dtd 17 Aug 1972

U. S. NAVAL AIR ENGINEERING CENTER

PHILADELPHIA, PENNSYLVANIA

ENGINEERING DEPARTMENT (SI)

NAEC-ENG-7583 CODE IDENT. NO. 80020 11 Dec 1969

FLIGHT DECK ARRESTING GEAR AND BARRICADE CONFIGURATION CRITERIA FOR MARK 7 MOD 3 ARRESTING ENGINE

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NAVAL AIR ENGINEERING CENTER
PHILADELPHIA, PENNSYLVANIA 19112

ENGINEERING DEPARTMENT (SI)

NAEC-ENG-7593 CODE IDENT. NO. 80020 11 Dec 1969

FLIGHT DECK ARRESTING GEAR AND BARRICADE CONFIGURATION CRITERIA FOR MARK 7 MOD 3 ARRESTING ENGINE

Naval Air Systems Cmd
(AIR-604) Wash DC 20360

PREPARED BY

APPROVED BY

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12/11/69 ml

ABSTRACT

This report presents information regarding flight deck arresting gear & barricade configuration criteria for the Mk. 7 Mod. 3 arresting engines and is provided for use in the preparation of installation plans for new aircraft carriers or on present carriers planning utilization of Mk. 7 Mod. 3 arresting gear.

I INTRODUCTION

The purpose of this report is to provide information for use in the preparation of Mark 7 Mod 3 arresting gear installation plans for new carriers or existing carriers which are to be reconfigured to utilize new gear.

II SUMMARY

The installation criteria for the arresting engine and associated equipment, i. e., deck pendant, barricade, flight deck and arresting gear control station were determined based upon past operational experiences and reflect the optimum design configuration features for future recovery systems.

III CONCLUSION

Criteria contained herein has been compiled and developed based on past experience in order to obtain the best operational features in future recovery system reconstruction and new carrier design. Deviations from criteria established within this report should initially be approved by the Naval Air Engineering Center. In addition, Preliminary guidance arrangements and all pertinent recovery system drawings should be forwarded to the Naval Air Engineering Center for review and approval.

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VI REPORT TEXT

A. GENERAL CRITERIA:

1. Estimated weight and space requirements for the arresting engines and associated equipment are shown on Figures 1 through 5. Arresting engines should be placed athwartship so that lengths of port and starboard purchase cable from the deck sheave to the engine movable crosshead are as nearly equal as possible. In addition, Figure 6 shows an example of the desired positioning of the engines; the crosshead shall be on the starboard side of the ship when the engine is reeved, as shown in Figure 1.

2. Pendant engine deck runout is 349 feet to airplane tailhook. Barricade engine deck runout is 409 feet 6 inches to airplane nosewheel, which includes barricade slack takeup.

3. The drive system uses 28 inch pitch diameter sheaves throughout, as shown in Figure 7 with the exception of the 24 inch anchor damper turn-around sheave, as noted.

4. The choice number of sheaves (minimum) in the drive system for one engine is 10; 5 per each side of the engine extending to the flight deck. Description of these sheaves directly from one side of engine to the flight deck, is as follows:

    a. On deck fairlead sheave

    b. Bottom stationary sheave of sheave damper assembly

    c. Crosshead sheave of sheave damper assembly

    d. Thru-Deck sheave

    e. Flight-Deck sheave

5. The minimum allowable cable wrap in the arresting gear fairlead system which includes the sheave dampers, is 15 degrees. There is one exception: the "Y" type sheave damper installation may use a minimum of 10 degrees of cable wrap around the bottom stationary sheave with the sheave damper in battery position.

6. Use "Y" type sheave dampers wherever possible, in preference to the "X" type. This arrangement is shown in Figure 2.

7. Direct access is required to sheave damper compartments from each arresting engine compartment to enable arresting gear personnel to move quickly from one compartment to another should emergency repairs be necessary during air operations. Access openings should be at least 24 inches by 36 inches with a 24 inch sill to permit passage of 28 inch pitch diameter sheaves which have an outside diameter of 29-1/8 inches. Access openings of 18 inches by 24 inches will not permit passage of the sheave and are not suitable.

8. Where two sheave dampers are housed in one compartment, a minimum clearance of 4 feet is required between components for inspection, lubrication and maintenance.

9. The Arresting Gear Shop and the Arresting Gear Storeroom should be centrally located as close as possible to the arresting engine compartments. The inclusion of two separate pouring compartments, approximately 12 feet x 16 feet is required. These should be on each side of the vessel, centrally located between and adjacent to all engine spaces. These compartments are to be used solely for pouring arresting gear cable terminals.

10. The arresting engine fluid drain and fill system should be centrally located as close as possible to the arresting engine compartments, as shown in Figure 8.

11. The sheave damper fluid drain and fill system should be centrally located among the sheave damper installations, as shown in Figure 9.

12. Provide longitudinal tracks for use with an overhead trolley in all arresting engine compartments. Tracks should be located over the center of each engine and over the engine compartment opening in the gallery deck. The tracks must extend the full length of the engine compartment. The overhead trolley must be capable of lifting 5 tons and must have a built-in automatic brake.

13. Retractable deck sheaves are to be installed in accordance with Figure 10. However, this installation should be restricted to pendant and barricade deck sheave locations where above deck obstructions interfere with airplane movement and cannot be tolerated. If no interference problem exists, the fixed horizontal deck sheave should be used. If a retractable deck sheave installation is desired, the following is necessary in order to maintain a minimum fleet angle between the retractable deck sheave and the through deck sheave. When the installation of the through deck sheave is not 90 degrees to the deck pendant line, the following principles apply:

    a. If the location of the through deck sheave must be positioned inboard, or less than 90 degrees to the deck pendant line, it is required that the distance between the retractable sheave and through deck sheave be made greater than the normal requirement as shown in Figure 10.

    b. If the location of the through deck sheave must be positioned outboard, or greater than 90 degrees to the deck pendant line, it is required that the distance between the retractable sheave and through deck sheave be made less than the normal requirement as shown in Figure 10.

14. Since the time required to rig a barricade is critical, it is recommended that the barricade webbing stowage compartment be located as close to the barricade stanchion as possible. The preferred location for this compartment is outboard of the starboard barricade stanchion. The compartment should be positioned so that the hatch rollers are perpendicular to the line of pull on the barricade webbing when it is being pulled onto the deck. If the barricade hatch is in the deck, the hatch cover must be "quick" opening, to reduce barricade rigging time to a minimum.

15. The material specification for the auxiliary air flask, which is to be furnished by the installing activity, should be QQ-S-682, FS 302, Finish 1, Grade B. (This material should justifiably be of a better grade than that used for the air flask on the arresting engine since the auxiliary flask is used at 3000 PSI as opposed to 400 to 800 PSI in the engine air flask.)

16. Terminal impact pads will be required for all deck pendant installations in accordance with Figure 11.

17. A sound powered phone (6 j g) jack box, tied into the arresting gear telephone circuit, should be provided at the following locations:

    a. Each arresting engine control panel

    b. Each sheave damper charging panel

    c. Each terminal pouring room

    d. Each arresting gear work shop

    e. Barricade hydraulic control station

    f. Arresting Gear deck edge control station

    g. LSO platform

    h. Pri-Fly

    i. Arresting Gear Flight Deck Officer

18. The face of all fluid gages, for sheave dampers, barricade power package, engine stowage tank and sheave damper stowage tank, should be suitably illuminated. Gage lights can be mounted on the back for the shine-thru type and for the metal encased gage, a light should be mounted to shine on, or reflect light onto the face of the gage. Also, battle lanterns should be installed in all engine compartments directed at the engine dial and engine control panel. In addition, installation of battle lanterns should be made in all sheave damper spaces - one directed at the sliding sheave and one at the sheave damper control panel.

19. Individual air stations must be provided in each of the various systems requiring an air supply (wire supports and controls, automatic lubrication system and anchor damper battery positioner) to ensure that these systems are furnished an adequate air supply. In addition, an air pressure gage must also be included near each station to render operating personnel assurance of adequate pressure in each system.

B. DECK PENDANT CRITERIA:

1. The deck pendant sheave span for use with a Mark 7 Mod 3 arresting engine may be between 120 and 130 feet. A 120 foot span is recommended. A span up to 130 feet provides no advantage but may be used, if required.

2. Deck sheave spans for each pendant should be as close to being equal as possible. If this is not achieved, the difference in length between deck pendants will provide severe logistic problems with possible installation errors. Variations must be avoided if at all possible.

3. All deck pendants must be in the "wrap-on" sheave arrangement, as shown in Figure 7.

4. All deck sheave span centers should be on the angled deck centerline if at all possible. If off-center positioning cannot be avoided, the centerline of the deck sheave span should not be more than two feet from either side of the angled deck centerline.

5. Deck pendant spacing for a deck sheave span between 120 feet and 130 feet should be as follows:

   Note: These figures are based on an airplane touchdown point between wires 2 and 3.

   a. No. 3 pendant should be 254 feet (+0 feet -4 feet) forward of the aft ramp.

   b. No. 2 pendant should be 40 feet (+4 feet -0 feet) aft of No. 3 pendant.

   c. No. 1 pendant should be 40 feet (+4 feet -0 feet) aft of No. 2 pendant.

   d. No. 4 pendant should be 40 feet (+4 feet -0 feet) forward of No. 3 pendant.

      Note: The distances given provide a proper landing area aft of the first wire based on the latest lens setting and hook to ramp clearance.

C. BARRICADE CRITERIA:

1. Figure 4 provides the required information for the installation of the barricade stanchion hydraulic control.

2. The barricade stanchion span should be 130 feet (± 5 feet). The sheave span should be 120 feet (+ 5 feet - 2 feet). Both the stanchion and the deck sheave should be on the same centerline. (It should be noted that if a minimum stanchion span is used "125 feet" and a maximum sheave span "125 feet" is used, they will overlap: they must then be separated and still stay within the spans listed above).

3. The off-center distance for the stanchion (and sheave) spans should not exceed two feet either to port or starboard of the landing area centerline.

4. The barricade should preferably be located 235 to 245 feet forward of the aft ramp; in no case should a barricade be placed less than 210 feet from the aft ramp. This is to assure that all of the aircraft's wheels are on the deck prior to engagement into the barricade webbing.

5. A "wrap-on" cable sheave arrangement is required for the barricade installation, as shown on Figure 12.

6. The barricade winch air motor, which is used to tension the barricade webbing system, must operate from a 90 psi minimum air supply (150 psi maximum) in order to provide proper tensioning of the webbing.

D. FLIGHT DECK CRITERIA:

1. The utilization of two basic landing area criteria are to be employed to evaluate the arresting gear arrangement. A typical arrangement is shown on Figure 13. All airplane wheels are to be safely on the deck, at full gear runout, to accommodate the following airplane landing patterns:

    a. Landings parallel to the angled deck centerline, twenty feet off-center to the port for all pendants and the barricade.

b. Landings on-center, angled to the port. This angle, the yaw angle, is presently set at a minimum of 7 degrees for all pendants and the barricade. This will accommodate airplanes landing at an angle to the landing area.

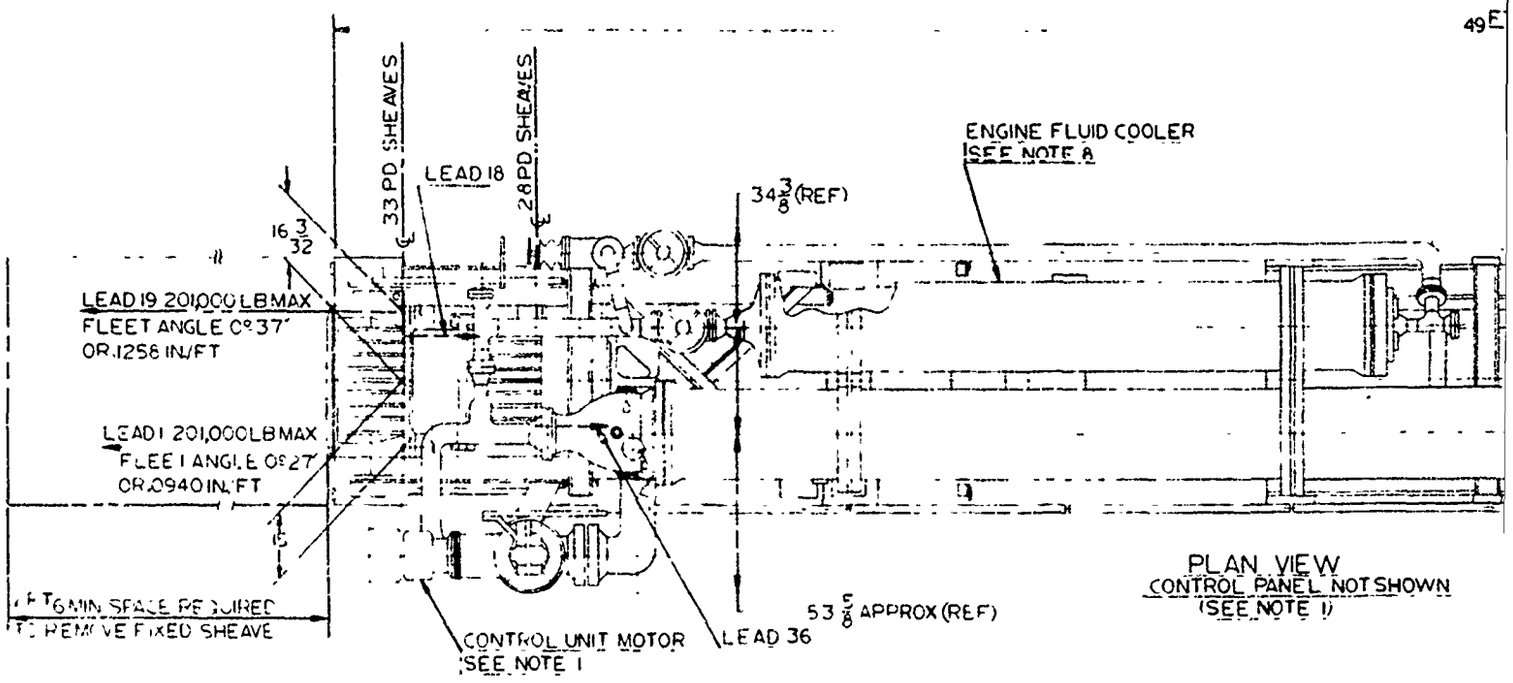
2. The requirement for airplane turn-around is 110 feet when measured from the airplane hook point on the angled deck centerline from the end of full runout of the No. 4 deck pendant.

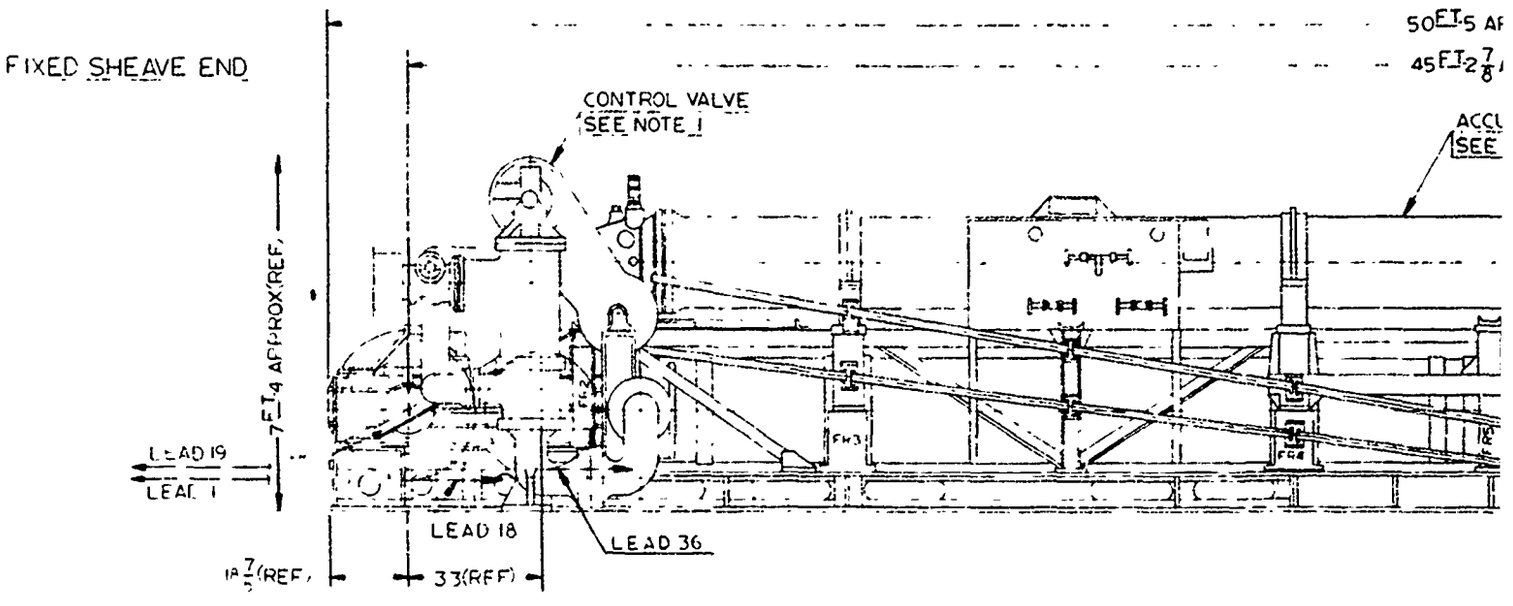
3. The installation of wire supports is shown in Figure 14. Locations for wire supports are to be in accordance with data as shown in Figure 15.

E. ARRESTING GEAR CONTROL STATION:

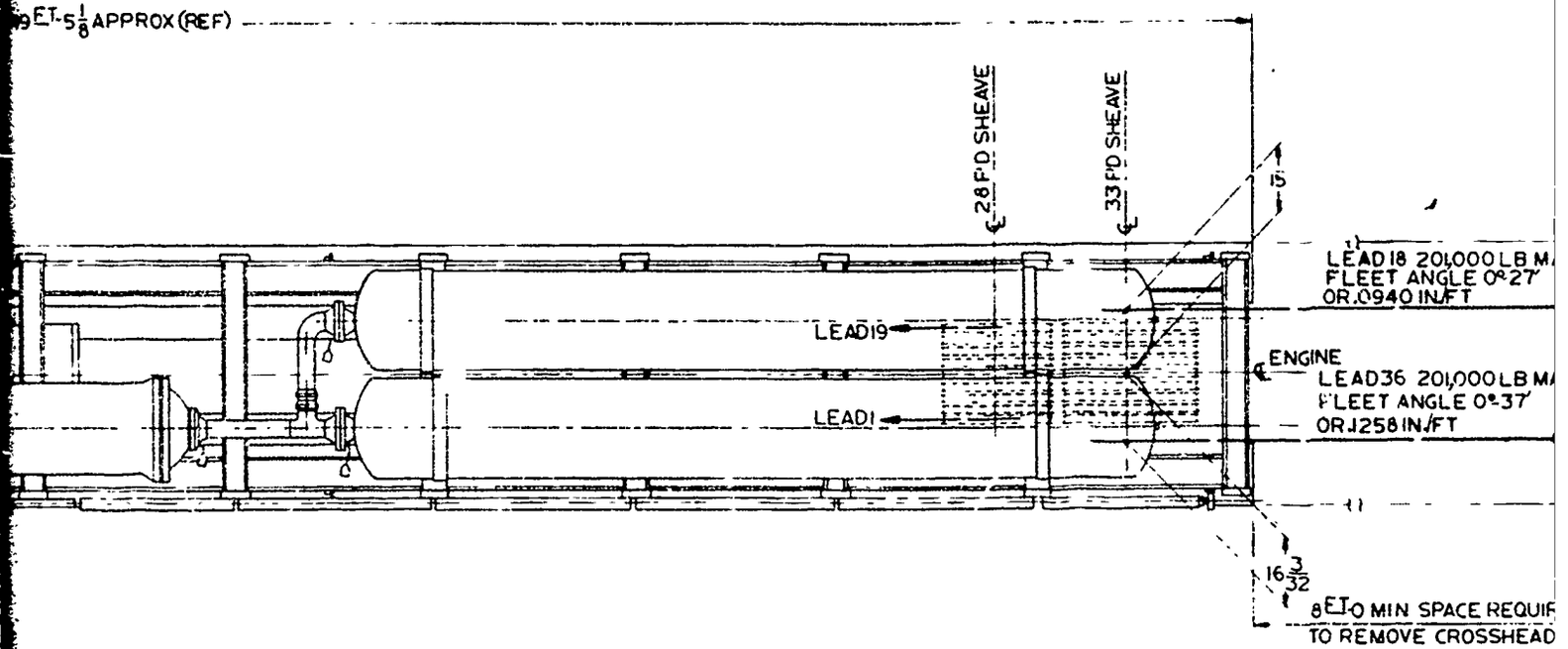
1. To provide an unobstructed view of the landing area the optimum location for the "deck edge controls" are inside the carrier island just below Pri-Fly level. The island location also ensures personnel maximum protection from the environment, including noise. The second best location for the "deck edge controls" is on the starboard side of the vessel, away from the carrier island to permit an unobstructed view of incoming air craft and all pendants and the barricade from battery position to full runout.

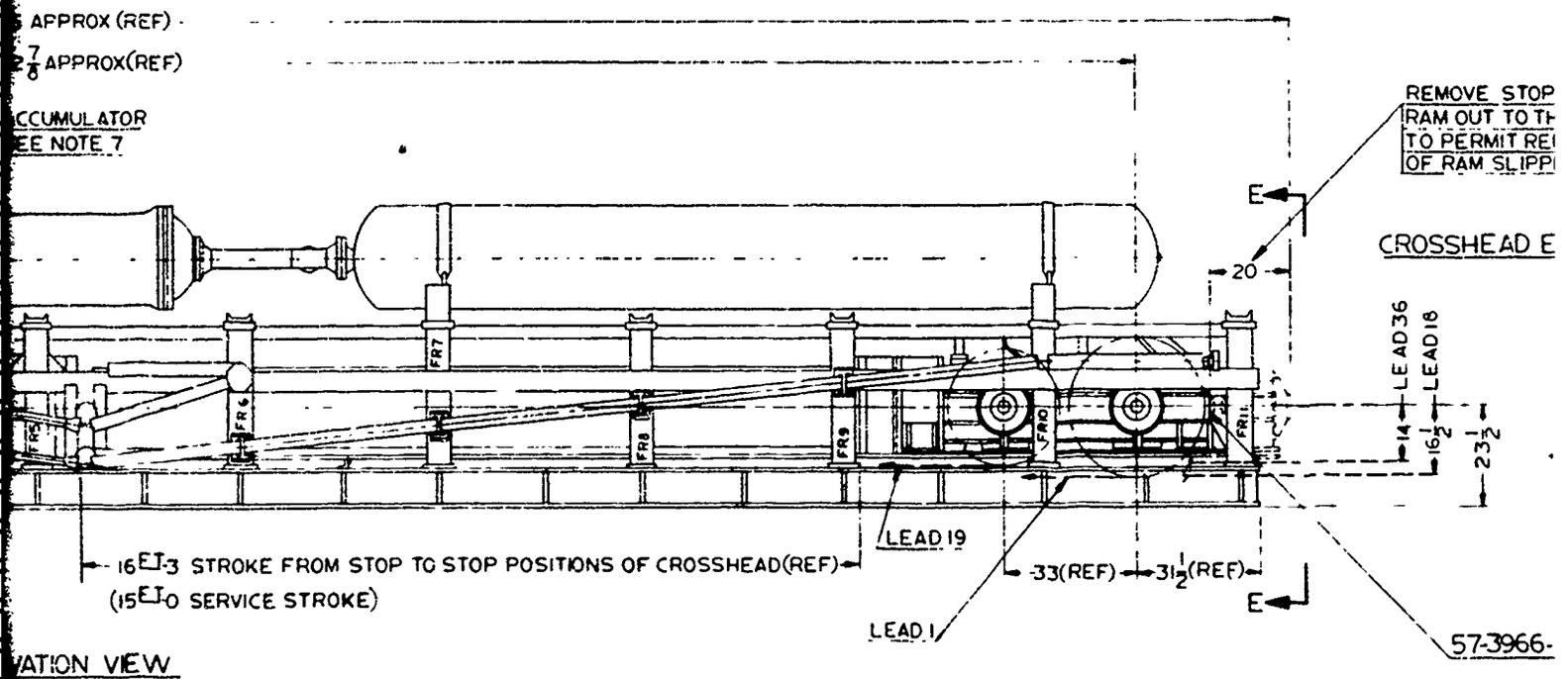
NOTE: Port side deck edge controls are hazardous with regard to "wave-off" airplanes, or during a possible cable failure.


33 PD SHEAVES
28 PD SHEAVES
LEAD 18
ENGINE FLUID COOLER
SEE NOTE 8
34 3/8 (REF)
16 3/32
LEAD 19 201,000 LB MAX
FLEET ANGLE 0° 37'
OR .1258 IN/FT
LEAD 1 201,000 LB MAX
FLEET ANGLE 0° 27'
OR .0940 IN/FT
FT 6 MIN SPACE REQUIRED
TO REMOVE FIXED SHEAVE
CONTROL UNIT MOTOR
SEE NOTE 1
LEAD 36
53 5/8 APPROX (REF)
PLAN VIEW
CONTROL PANEL NOT SHOWN
(SEE NOTE 1)


FIXED SHEAVE END
CONTROL VALVE
SEE NOTE 1
7 FT 4 APPROX (REF)
LEAD 19
LEAD 1
LEAD 18
LEAD 36
18 7/8 (REF)
33 (REF)

ELEVAT



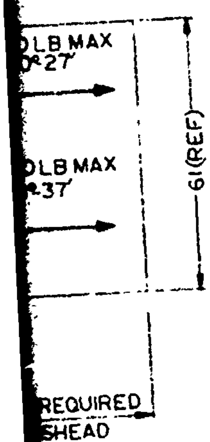


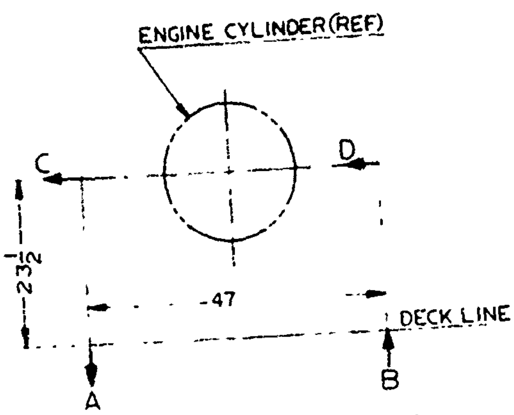
VATION VIEW

02-61946

2

6 5



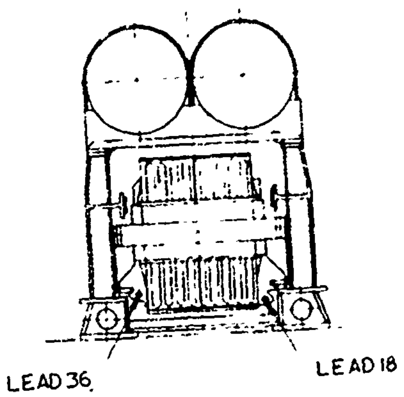


5·6·7·8·9·10·11	6200	6200	14300	14300
3 & 4	5400	5400	14300	14300
1 & 2	25300	25300	5800	5800
FRAME NO.	A	B	C	D

LOAD DIAGRAM
ALL LOADS IN POUNDS
(SEE NOTE 5)

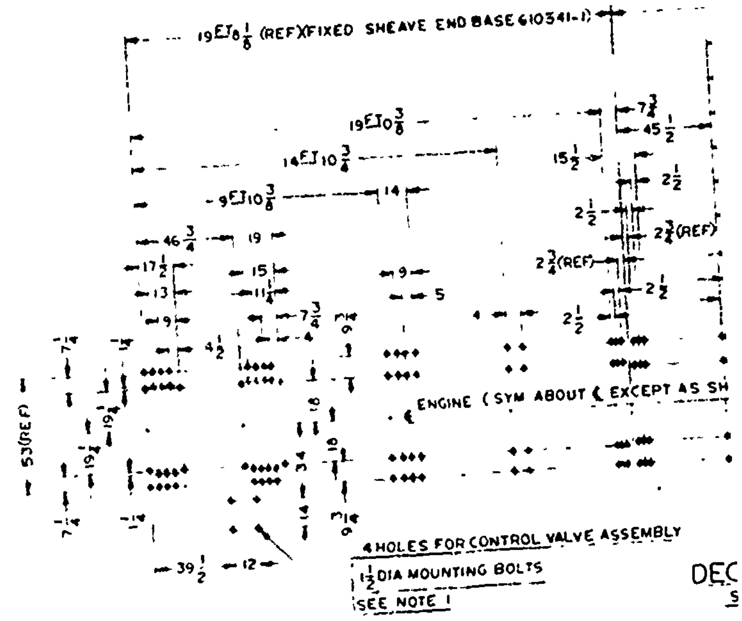
STOP AND BACK
TO THIS POSITION
MIT REPLACEMENT
SLIPPERS

EAD END



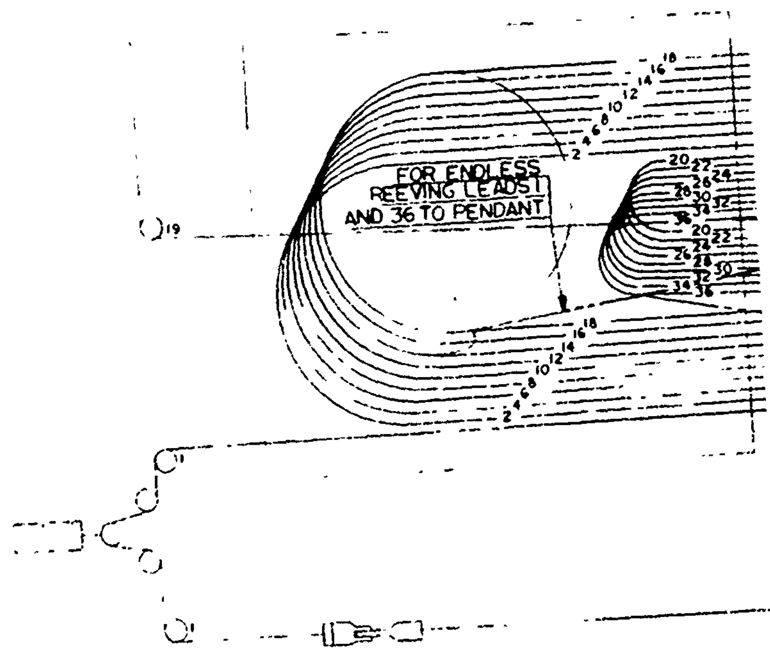
VIEW E-E

3966-1 STOP(REF)



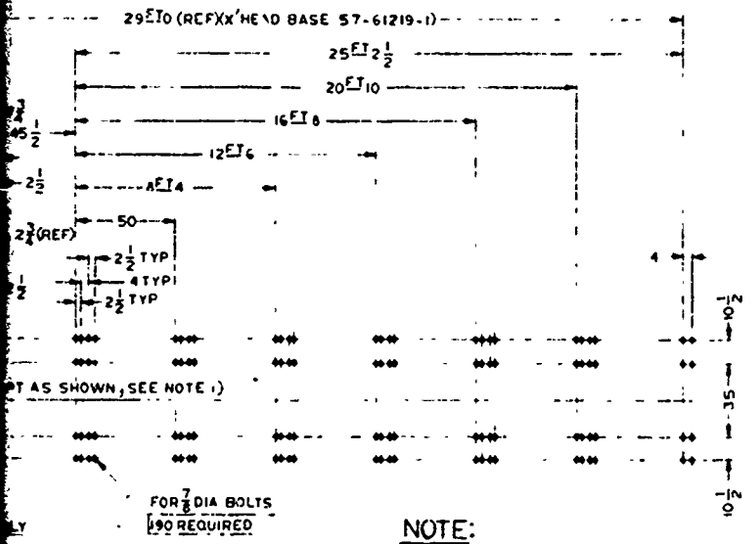
DEC

FIXED SHEAVE



REEVING DIAGRAM (SEE N
18:1 RATIO; SINGLE PENDANT A
CABLE ANCHOR DAMPER
18:1 RATIO; ENDLESS REEVING
SINGLE PENDANT
SCALE: NONE

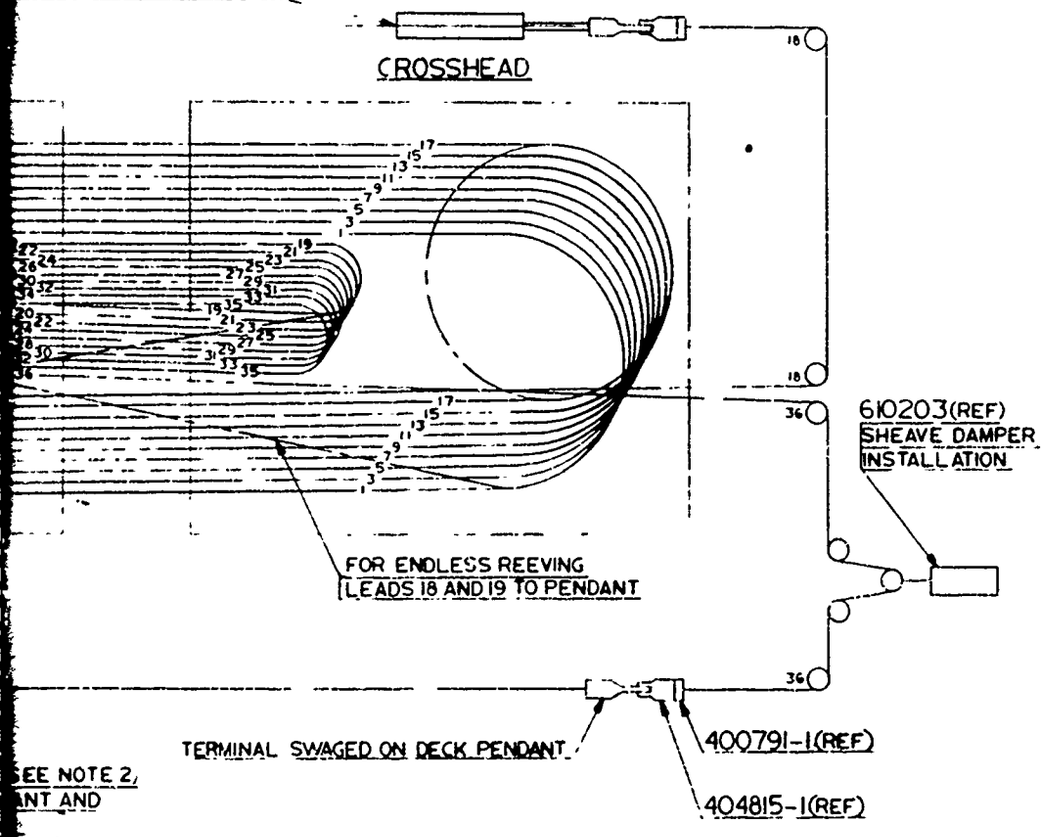
6 5



DECK BOLT PATTERN
SCALE: 3/8 = 1 FT 0

NOTE:
BOLT PATTERN IS FOR GENERAL INFORMATION ONLY; ACTUAL BOLT LOCATION SHOULD BE TEMPLATED FROM ENGINE BASE.

610100 (REF)
OR DAMPER INSTALLATION



SEE NOTE 2,
ANT AND
VING

NOTES:

1. DATA SHOWN ON THIS ARRESTING ENGINE C CONVENIENT, ENGIN MOUNTED OPPOSITE PANEL MAY BE ASSE LOCATION, MODIFYING
2. THE CHOICE OF LE DETERMINED BY TH OF THE ENGINE AN APPROVAL OF THE ENGINEERING FACI
3. ON ENGINES WHICH CYLINDER SADDLE
4. THOROUGHLY CLEA
5. THE DECK SUPPOR LOADS AND MOMENT THESE LOADS ARE BREAKING STRENGT DYNAMIC CONDITION AND/OR ON OPPOSIT SEE PLAN VIEW SH
6. AFTER INSTALLATIO HYDROSTATICALLY REPORT NAEL-EN
7. THE INSTALLING A COGNIZANCE THE F
   (a) A 3000 PSI AI ACCUMULATOR
   (b) A 440 VOLT, OPERATION OF CAPACITY OF
   (c) A 110 VOLT, 60 OPERATION OF MUST BE NON
   (d) ALL NECESSA MIL-S-5000 L
   (e) ALL NECESSA CANDLE POWE ACCUMULATOR
   (f) AUXILIARY F ARRESTING E
8. SEA WATER OR FRE SUPPLIED BY SHIP WATER PRESSURE 200 PSI.
9. GENERAL DATA:
   (a) CABLE; 1 3/8 DIA (6 x CABLE 171,0
   (b) LENGTH OF CA AGAINST STOP 831 FEET.
   (c) WEIGHT OF E
10. SUPPLEMENTARY SHEAVE END, 57 ARRESTING ASSE ASSEMBLY (WIT
(E) 11. BOLTING REQUIREME INSTRUCTION 9110

CLASSIFICATION O
CRITICAL - C TO
MAJOR M
MINOR - ALL OT

02-61946

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVED
	D	CL "R" CHG. NRN. (1) REPLACES REV (C) WITHOUT CHG. KIDDER		
	(E)	NRN CL R CHG ADDED NOTE 11, LEFT-OUT WHEN REDRAWN FROM REV C		

NOTES:

1. DATA SHOWN ON THIS DRAWING IS FOR THE INSTALLATION OF A MK7 MOD3 ARRESTING ENGINE ON ALL TYPES OF VESSELS. WHEN NECESSARY, OR MORE CONVENIENT, ENGINE ASSEMBLY WITH CONTROL VALVE INSTALLATION MOUNTED OPPOSITE HAND FROM THAT SHOWN SHALL BE INSTALLED. CONTROL PANEL MAY BE ASSEMBLED IN POSITION SHOWN OR ANY OTHER CONVENIENT LOCATION, MODIFYING PIPING AS NECESSARY.
2. THE CHOICE OF LEAD CABLES, SHOWN IN REEVING DIAGRAM, TO BE DETERMINED BY THE INSTALLING AGENCY, DEPENDING ON THE FUNCTION OF THE ENGINE AND LOCAL INSTALLATION CONDITIONS, SUBJECT TO THE APPROVAL OF THE ENGINEERING DEPARTMENT OF THE NAVAL AIRCRAFT ENGINEERING FACILITY.
3. ON ENGINES WHICH ARE TO BE USED FOR ENDLESS REEVING, THE CYLINDER SADDLES MUST BE MODIFIED AS SHOWN ON DRAWING 57-50874.
4. THOROUGHLY CLEAN AND PRESERVE MANIFOLD PIPING PER MPR-1015.
5. THE DECK SUPPORTING THE ENGINE MUST BE REINFORCED TO CARRY ALL LOADS AND MOMENTS SHOWN IN LOAD DIAGRAM AND IN OTHER VIEWS. THESE LOADS ARE BASED ON 100% EFFECTIVENESS OF THE MAXIMUM BREAKING STRENGTH OF THE CABLE UNDER THE MOST SEVERE EMERGENCY DYNAMIC CONDITIONS. ALL LOADS CAN OCCUR IN OPPOSITE DIRECTIONS AND/OR ON OPPOSITE SIDES FROM THE ONES SHOWN. FOR DECK BOLT PATTERN, SEE PLAN VIEW SHOWN ON THIS DRAWING.
6. AFTER INSTALLATION OF ARRESTING ENGINE AND REEVING CABLE, TEST HYDROSTATICALLY IN ACCORDANCE WITH SHIPBOARD TEST PROCEDURES REPORT NAEL-ENG-7085.
7. THE INSTALLING AGENCY SHALL FURNISH AND INSTALL UNDER ITS OWN COGNIZANCE THE FOLLOWING ITEMS:
   (a) A 3000 PSI AIR SUPPLY LINE WITH A STRAINER FOR CHARGING THE ACCUMULATOR AND AUXILIARY AIR FLASKS.
   (b) A 440 VOLT, 60 CYCLE, 3 PHASE POWER SUPPLY LINE FOR THE OPERATION OF THE CONTROL UNIT MOTOR WITH A MAXIMUM RATED CAPACITY OF ONE (1) HORSEPOWER.
   (c) A 110 VOLT, 60 CYCLE, SINGLE PHASE POWER SUPPLY LINE FOR THE OPERATION OF THE WEIGHT SELECTION REMOTE INDICATORS. VOLTAGE MUST BE NON-FLUCTUATING.
   (d) ALL NECESSARY 7/8 DIA BOLTS (MATERIAL SPEC MIL-S-6758 OR MIL-S-5000 LENGTHS TO SUIT) TO FASTEN THE ENGINE TO THE DECK.
   (e) ALL NECESSARY LIGHTS TO GIVE A MINIMUM INTENSITY OF 30 FOOT CANDLE POWER IN THE VICINITY OF THE CONTROL PANEL AND THE ACCUMULATOR PISTON POSITION INDICATOR.
   (f) AUXILIARY FLASKS FOR 25 CUBIC FT OF AIR AT 3000 PSI IN EACH ARRESTING ENGINE COMPARTMENT.
8. SEA WATER OR FRESH WATER FOR ENGINE LIQUID COOLER TO BE SUPPLIED BY SHIP SERVICE. WATER DELIVERY TO BE 100 GPM. MINIMUM WATER PRESSURE 100 PSI. MAXIMUM WATER PRESSURE NOT TO EXCEED 200 PSI.
9. GENERAL DATA:
   (a) CABLE;
   1 3/8 DIA (6×25) FILLER WIRE LANG LAY. BREAKING STRENGTH OF CABLE 171,000 POUND MINIMUM.
   (b) LENGTH OF CABLES REEVED WITHIN STRUCTURE WITH CROSSHEAD AGAINST STOP: ON OUTER SHEAVES-942 FEET, ON INNER SHEAVES-831 FEET.
   (c) WEIGHT OF ENGINE EXCLUSIVE OF LIQUID AND CABLES = 82,813 LB.
10. SUPPLEMENTARY ARRESTING ENGINE DRAWINGS: 610541 BASE-FIXED SHEAVE END, 57-61219 BASE CROSSHEAD END, 50-61937 ENGINE-ARRESTING ASSEMBLY (WITH COOLER), 50-61938 ENGINE-ARRESTING ASSEMBLY (WITHOUT COOLER).
11. (E) BOLTING REQUIREMENTS ARE TO BE IN ACCORDANCE WITH BUSHIPS INSTRUCTION 9110.54.

NEXT ASSEMBLY	QTY REQD	PART NUMBER	DESCRIPTION	STOCK	MATERIAL	SPECIFICATION	UNIT WT

LIST OF MATERIALS

CLASSIFICATION OF CHARACTERISTICS
CRITICAL - C TO C
MAJOR M TO M
MINOR ALL OTHER CHARACTERISTICS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± — DECIMALS ±.010 ANGLES ±½°

THESE DOCUMENTS ALSO ARE A PART OF THIS DRAWING
MPR 1015

MECHANICAL FINISH SURFACE ROUGHNESS IN MICROINCHES
√ SURFACE ROUGHNESS IN ACCORDANCE WITH ASA B46

DESIGNED FOR MK7 MOD3

DRAWN	KIDDER	4APR67
CHECKED	POOLE	4APR67
MATERIAL		
ANALYZED		
SUPERVISOR	Betz	5APR67
APPROVED		4/5/67

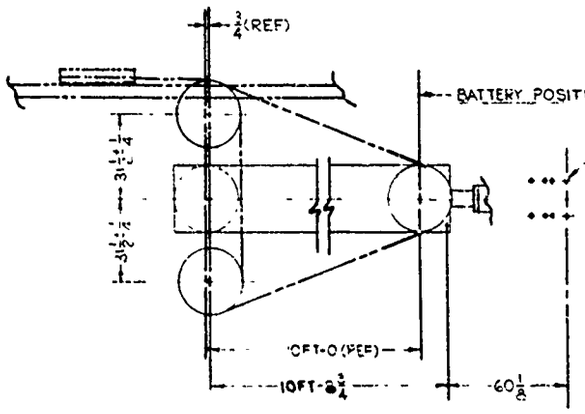
NAVAL AIR ENGINEERING LABORATORY (SI)
NAVAL AIR ENGINEERING CENTER, PHILA., PA., 19112

TITLE
**ENGINE, ARRESTING
MK 7 MOD 3
INSTALLATION DATA**

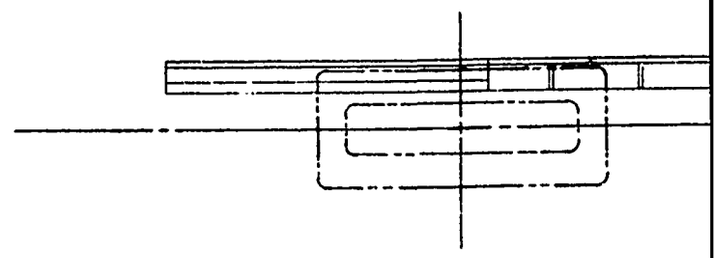
SIZE H | CODE IDENT NO 80020 | DRAWING NO. 02-61946

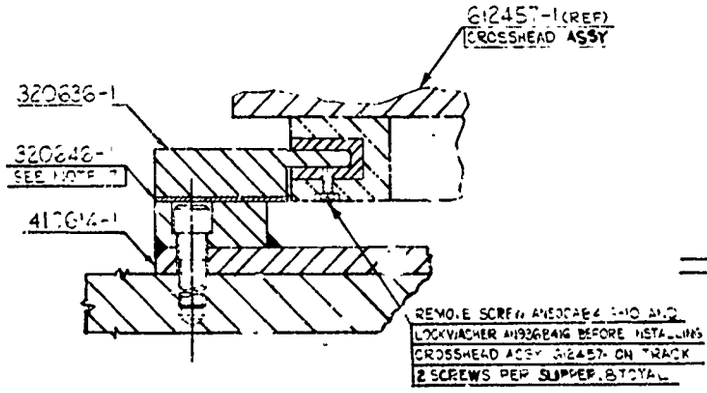
SCALE 3/4=1 FT AND NOTED | SHEET

FIGURE 1

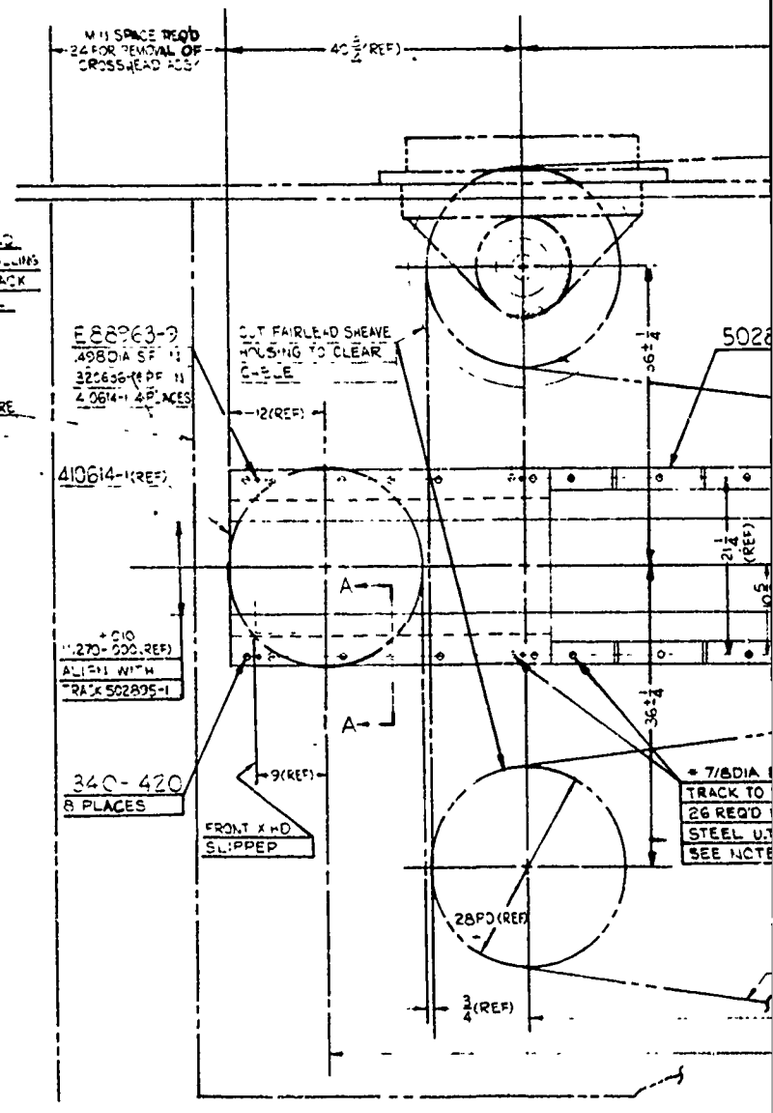


-2 ASSEMBLY
SHOWING 'Y' SHEAVE ARRANGEMENT (SEE NOTE 13)
SCALE 1/2 = 1/2

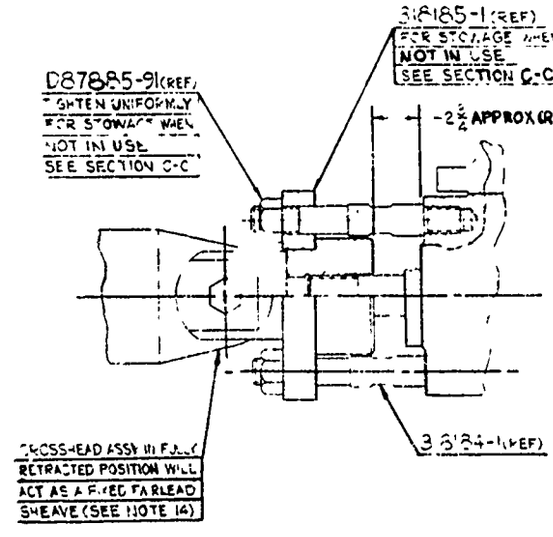




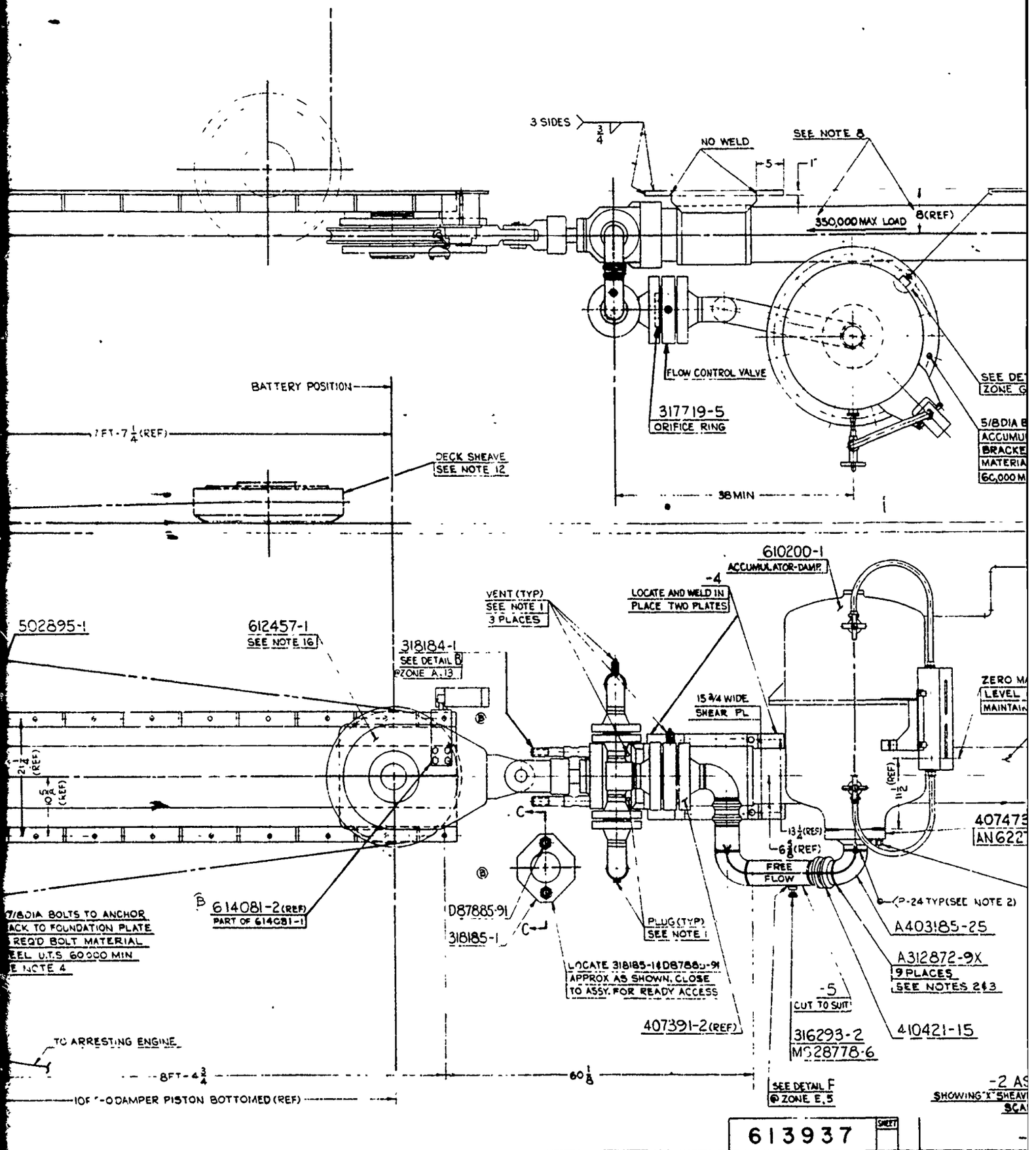
SECTION A-A
SCALE - HALF SIZE



* CABLE GUARD ENCLOSURE
SEE NOTE 10

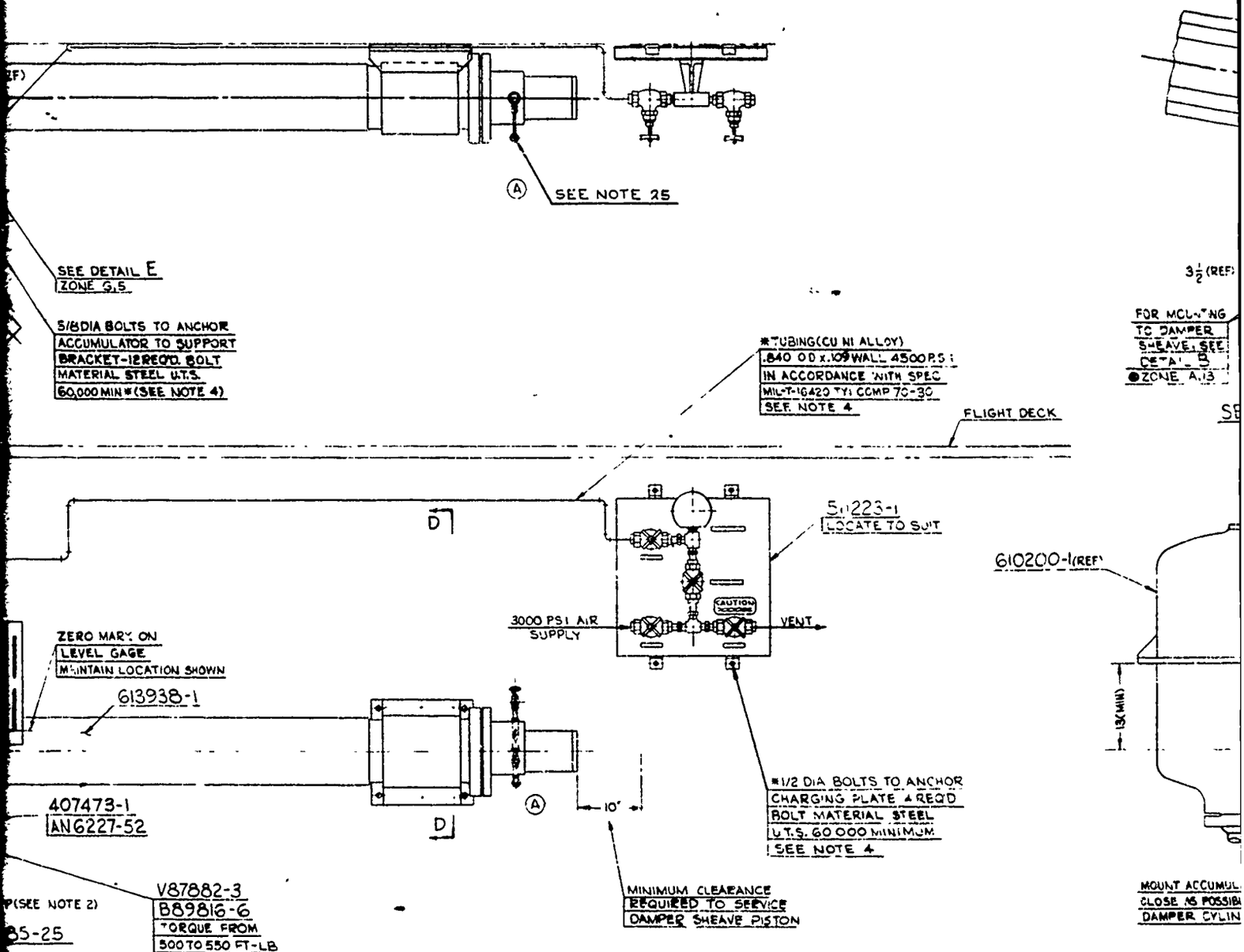


DETAIL B
INSTALLATION FOR BLOCKING SHEAVE
SEE NOTE 14
SCALE 3 = 12



613937 SHEET

2



P (SEE NOTE 2)

85-25

72-9X

S

TES 2 & 3

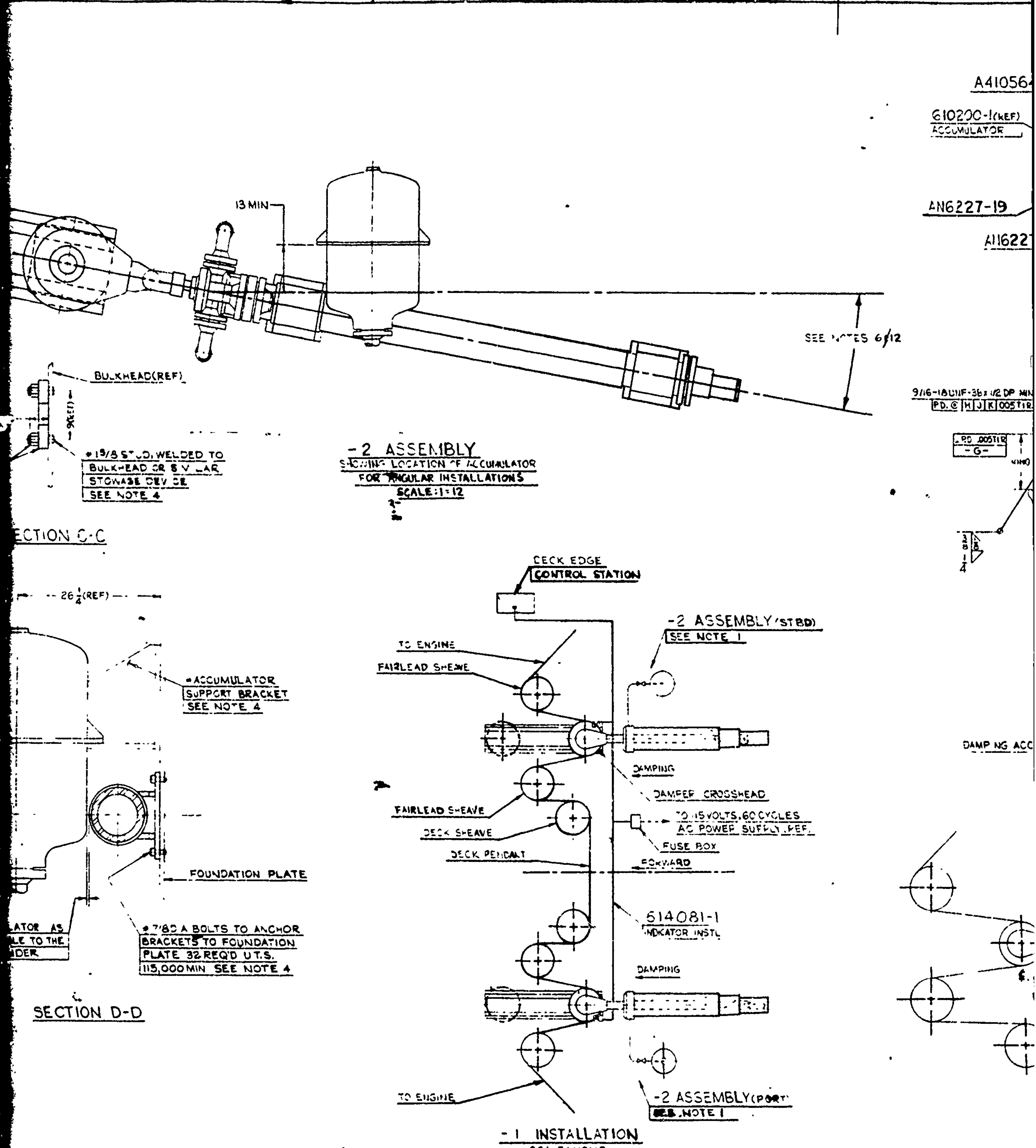
1-15

-2 ASSEMBLY

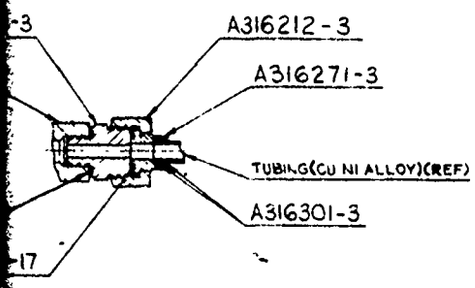
HOWING 'X' SHEAVE ARRANGEMENT (SEE NOTE 13)

SCALE: 1 1/2 = 1'2

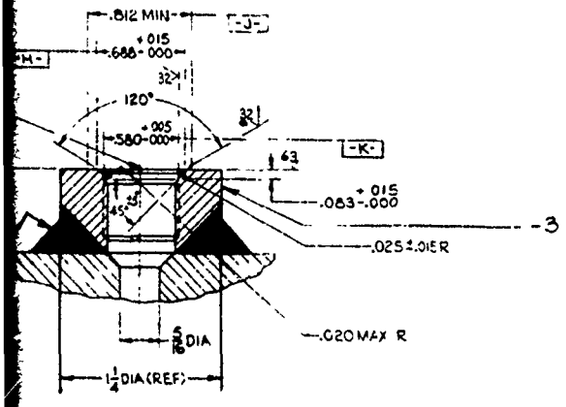
3


A41056
610200-1(REF)
ACCUMULATOR
AN6227-19
AN6227
13 MIN
SEE NOTES 6/12
BULKHEAD(REF)
#19/8 STUD, WELDED TO
BULKHEAD OR 8 V BAR
STOWAGE DEVICE
SEE NOTE 4
-2 ASSEMBLY
SHOWING LOCATION OF ACCUMULATOR
FOR ANGULAR INSTALLATIONS
SCALE: 1=12
9/16-18UNF-3B x 1/2 DP MIN
SECTION C-C
26 1/4(REF)
*ACCUMULATOR
SUPPORT BRACKET
SEE NOTE 4
FOUNDATION PLATE
* 7/8 A BOLTS TO ANCHOR
BRACKETS TO FOUNDATION
PLATE 32 REQ'D U.T.S.
115,000 MIN SEE NOTE 4
SECTION D-D
DECK EDGE
CONTROL STATION
-2 ASSEMBLY (STBD)
SEE NOTE 1
TO ENGINE
FAIRLEAD SHEAVE
DAMPING
DAMPER CROSSHEAD
FAIRLEAD SHEAVE
TO 115 VOLTS, 60 CYCLES
AC POWER SUPPLY REF.
DECK SHEAVE
FUSE BOX
DECK PENDANT
FORWARD
514081-1
INDICATOR INST.
DAMPING
DAMPING ACC
TO ENGINE
-2 ASSEMBLY (PORT)
SEE NOTE 1
-1 INSTALLATION
SCALE: NONE

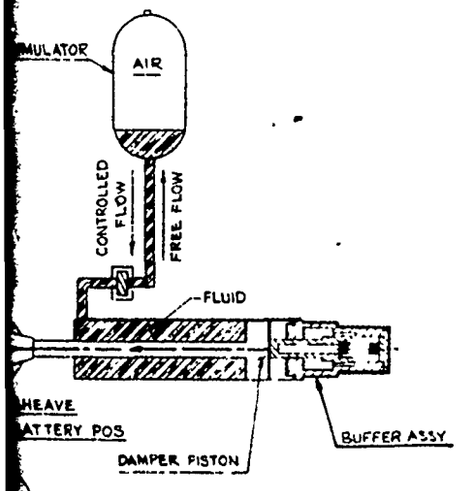
613937



DETAIL E
FITTING ASSEMBLY
SCALE - NONE



DETAIL F
BOSS & THREAD DATA
SCALE - TWICE SIZE



FLOW DIAGRAM
SCALE : NONE

17. ADD OR REMOVE SHIMS 320646-1 AS NECESSARY TO MAINTAIN ALIGNMENT OF SHEAVE TRACK RAILS. (REF 320636-1 & 502895-1)
18. MATERIAL IS NOMINAL SIZE WITHOUT MANUFACTURING ALLOWANCE. FOR NAEL(SI) USE ONLY.
19. MATERIAL FOR PARTS-3 & 4 SHALL BE IN ACCORDANCE WITH QQ-S-741 GR B.
20. MATERIAL FOR PART-5 SHALL BE IN ACCORDANCE WITH WW-P-404 CLASS 3 XS.
21. DIMENSIONING AND TOLERANCING IS IN ACCORDANCE WITH MIL-STD-8.
22. ALL PIPE RUNS SHALL BE SUPPORTED EVERY 6FT (APPROX) TO REDUCE PIPING VIBRATION.
23. INSTALLING ACTIVITY SHALL FURNISH THE FOLLOWING:
    (a) JACK BOXES FOR PHONE CONNECTIONS SHALL BE INSTALLED IN SHEAVE DAMPER AREA.
    (b) INSTALL GAUGE LIGHTS FOR ACCUMULATOR FLUID LEVEL GAUGES.
    (c) INSTALL SUITABLE LIGHT AT CONTROL PANEL 511223-1.
    (d) FLUID STOWAGE SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH NAEL(SI) DWG 511168.
24. NUMBER OF SCALE FREE COUPLINGS (410421-15) & WELDING RING (312872-9X) PROVIDED FOR -2 ASSEMBLY INCLUDES AN ADDITIONAL 100% FOR INSTALLATION SPARES.
(A) 25. BUFFER PIPING ARRANGEMENT MUST BE INSTALLED OPPOS BULKHEAD AS SHOWN. IT MAY BE REQUIRED TO DISASSEM THE EXISTING BUFFER PIPING ON THE SHEAVE DAMPER ASSEMBLY TO CONFORM TO ARRANGEMENT SHOWN.

3 | 2 | 1

RY TO MAINTAIN
36-1 & 502,395-1)
TURING ALLOWANCE.

ORDANCE WITH

H WW-P-404 CL 5585 & S.
WITH MIL-STD-8.
FT (APPROX) TO

WING:
HALL BE INSTALLED

FLUID LEVEL GAUGES.
511223-1.
D IN ACCORDANCE

) & WELDING
INCLUDES AN

NSTALLED OPPOSITE
ED TO DISASSEMBLE
AVE DAMPER
T SHOWN.

NOTES:

1. THIS DRAWING SHOWS A TYPICAL SHIPBOARD INSTALLATION FOR THE MK7 MOD 3 DAMPER SHEAVES, PART NO. 613937-1. ALL DETAIL COMPONENTS ARE ALIKE FOR PORT AND STARBOARD DAMPERS. FOR ASSEMBLY OPPOSITE TO THAT SHOWN, VENT VALVES AND DRAIN PLUGS SHALL BE ROTATED 180° SO THAT VENT VALVES ARE ON TOP AND DRAIN PLUGS ARE ON BOTTOM. FLOW CONTROL VALVES SHOULD BE ROTATED, IF NECESSARY SO THAT VENT VALVES ARE ON TOP.
2. (M101) WELDING PROCEDURE SHALL BE IN ACCORDANCE WITH MIL-STD-278; CLASS M MACHINERY, P-1 OR P-3 PIPING. FOR P-1 PIPING WELDING RING A312872-9X SHALL BE MACHINED OUT.
3. (M102) CYLINDERS, PIPE LINES, AND ACCUMULATORS SHALL BE THOROUGHLY CLEANED AS NECESSARY BEFORE AND AFTER ASSEMBLY TO INSURE REMOVAL OF ALL METALLIC WASTE AND FOREIGN MATTER PRIOR TO FILLING WITH FLUID, IN ACCORDANCE WITH ARRESTING GEAR SERVICE BULLETIN 168.
4. ALL BOLTS, NUTS, SUPPORT BRACKETS, TUBING, ETC. MARKED THUS * SHALL BE SUPPLIED BY THE INSTALLING ACTIVITY.
5. (M103) ALL COMPONENTS ARE TO BE PROPERLY ALIGNED TO INSURE SMOOTH FUNCTIONING WITHOUT BINDING OR CHATTERING.
6. CYLINDER ASSEMBLY & TRACK MAY BE INSTALLED ON A SLOPING ANGLE (UP TO 10°) WITH BUFFING END OF CYLINDER ON THE LOW END OF THE SLOPE. LOCATION OF ACCUMULATOR MAY BE VARIED, BUT IN ALL INSTALLATIONS IT MUST BE IN A VERTICAL POSITION. ANY VARIATION OF THE INSTALLATIONS AS SHOWN MUST BE APPROVED BY THE NAEL(SI) ENGINEERING DEPARTMENT.
7. PAINT ALL EXPOSED NON-WORKING & NON-FAYING SURFACES IN ACCORDANCE WITH MPR 1201-12.
8. FOUNDATION STRUCTURE FOR CYLINDER ASSEMBLY 613938-1 MUST WITHSTAND LOAD SHOWN IN PLAN VIEW.
9. (M104) BOTH 613937-2 ASSEMBLIES SHALL WITHSTAND WITHOUT LEAKAGE OR PERMANENT DEFORMATION THE FOLLOWING HYDROSTATIC TEST: (EQUIPMENT REQUIRED FOR TEST SHALL BE PROVIDED BY MANUFACTURER) WITH PURCHASE CABLE REEVED AND CROSSHEAD ASSY 612457-A LOCATED IN BATTERY POSITION. FILL DAMPER ACCUMULATOR WITH FLUID. CONDUCT STANDARD TEST PROCEDURE USED TO PROOF LOAD ARRESTING GEAR DRIVE SYSTEM. CAUTION: PRESSURE IN DAMPER ACCUMULATOR 610200-1 MUST NOT EXCEED 5000 PSI. DURING TEST, FILL BUFFER WITH OIL 91782-5 TO ℄ OF LIQUID SIGHT IND.
10. CABLE GUARD ENCLOSURE SHALL BE DESIGNED AND SUPPLIED BY THE INSTALLING ACTIVITY IN ACCORDANCE WITH NAEL(SI) DWG 612991.
11. FOR ACTUAL INSTALLATIONS ON DIFFERENT VESSELS SEE APPLICABLE BUREAU SHIP DRAWING.
12. ANGULAR DAMPER SHEAVE INSTALLATION MAY BE NECESSARY WHEN "X" TYPE SHEAVE ARRANGEMENT IS USED ON VESSELS OUTFITTED WITH RETRACTABLE DECK SHEAVES.
13. "X" AND "Y" ARRANGEMENTS CAN BE USED INTERCHANGEABLY.
14. TO BLOCK DAMPER SHEAVE ASSEMBLY IN A FIXED POSITION INSTALL MATERIAL AS SHOWN IN DETAIL "B" TO BLOCK DAMPER CROSSHEAD IN THE FULLY RETRACTED POSITION; CHARGE AND FILL DAMPER ACCUMULATOR TO NORMAL OPERATING PRESSURE & LEVEL.
15. THREAD DIMENSIONS & DESIGNATIONS SHALL BE INTERPRETED IN ACCORDANCE WITH HANDBOOK H-28 AND MIL-STD-9, RESPECTIVELY
16. (M105) BEFORE FLUID IS INTRODUCED INTO SYSTEM, CROSSHEAD ASSY 612457-1 ATTACHED TO CYLINDER ASSY 613938-1, SHALL MOVE WITHOUT BINDING OR CHATTERING UNDER A FORCE OF APPROX 200 LB.

	CL "R" RELO BUFF ADDE
A	
B	NRN, C BATT (6140 CROS "NON F

NEXT ASSEMBLY	QTY REQD	PART NUMBER	DESCRIPTION
613937-2	1	AN6227-52	PACKING "O" RING
-2	1	AN6227-19	PACKING "O" RING
-2	1	AN6227-17	PACKING "O" RING
-2	1	MS28778-6	GASKET "O" RING
-2	9	91782-5	ETHYLENE GLYCOL
-2	8	B89816-6	WASHER, FLAT
-2	4	E88963-9	PIN
-2	2	D87885-9	NUT, HEX
-2	8	V87882-3	BOLT
-2	1	612457-1	CROSSHEAD ASSY
-2	1	610200-1	ACCUM ASSY
-2	1	613938-1	CYLINDER ASSY
-2	1	511223-1	PANEL, CHARGING ASSY
-1	1	614081-1	INDICATOR INSTL
-2	1	502895-1	TRACK - SHEAVE
2	1	410616-1	TRACK-SHEAVE
-2	1	A410664-3	ADAPTER
-2	4	410421-15	COUPLING
-2	1	407473-1	FLANGE
-2	3	A408165-25	90° ELBOW, SHORT RAD
-2	2	320646-1	SHIM
-2	2	320636-1	RAIL
-2	1	318186-1	PLATE
-2	2	318184-1	STUD
-2	1	317719-5	ORIFICE RING
-2	1	A316301-3	RING SIL-BRAZE
-2	1	316298-2	VALVE, BLEED ASSY
-2	1	A316271-3	TAILPIECE
-2	1	A316212-3	UNION NUT
-2	16	A312872-9X	WELDING RING
-2	8	1340-1420	SCREW
-2	10FT	613937-5	PIPE (CUT TO SUIT)
-2	2	-4	SHEAR PLATE
-2	1	-3	BOSS
613937-1	2	-2	ASSEMBLY
—		613937-1	DAMPER SHEAVE INSTL

LIST OF MA[TERIAL]

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON
FRACTIONS ± DECIMALS ±.010 ANGLES ±½°

THESE DOCUMENTS ALSO ARE A PART OF THE DRAWING
MPR 1201-12
MPR 1400

MECHANICAL FINISH SURFACE ROUGHNESS IN MICROINCHES
√ THIS SYMBOL, EMBRACING THE SURFACE ROUGHNESS IN MICRO-INCHES REPRESENTS THE MAXIMUM ACCEPTABLE ROUGHNESS, AND MAY BE PRODUCED BY ANY MECHANICAL PROCESS.
REF SPEC MIL-STD-10

DESIGNED FOR MK 7 MOD 3
REF

DRAWN	D. SCHIRMER	8-2-66
CHECKED	P FRANKS	1-2-67
MATERIAL		
ANALYZED		
SUPERVISOR	R KNECHT	1-5-67
APPROVED	[signature]	1/10/67
APPROVED		DATE

CLASSIFICATION OF CHARACTERISTICS
CRITICAL - C TO C
MAJOR - M101 TO M105
MINOR - ALL OTHER CHARACTERISTICS

613937 | SHEET

3 | 2 | 1

WS A TYPICAL SHIPBOARD INSTALLATION FOR THE
R SHEAVES, PART NO. 613937-1. ALL DETAIL
ALIKE FOR PORT AND STARBOARD DAMPERS.
PPOSITE TO THAT SHOWN, VENT VALVES AND
LL BE ROTATED 180° SO THAT VENT VALVES
DRAIN PLUGS ARE ON BOTTOM. FLOW CONTROL
E ROTATED, IF NECESSARY SO THAT VENT VALVES

URE SHALL BE IN ACCORDANCE WITH MIL-STD-278;
RY, P-1 OR P-3 PIPING. FOR P-1 PIPING WELDING
SHALL BE MACHINED OUT.
NES, AND ACCUMULATORS SHALL BE THOROUGHLY
SSARY BEFORE AND AFTER ASSEMBLY TO
OF ALL METALLIC WASTE AND FOREIGN
FILLING WITH FLUID, IN ACCORDANCE WITH
SERVICE BULLETIN 168.
SUPPORT BRACKETS, TUBING, ETC. MARKED
UPPLIED BY THE INSTALLING ACTIVITY.
ARE TO BE PROPERLY ALIGNED TO INSURE SMOOTH
OUT BINDING OR CHATTERING.
LY & TRACK MAY BE INSTALLED ON A SLOPING
WITH BUFFING END OF CYLINDER ON THE LOW
LOCATION OF ACCUMULATOR MAY BE VARIED,
LLATIONS IT MUST BE IN A VERTICAL
RIATION OF THE INSTALLATIONS AS SHOWN MUST
THE NAEL(SI) ENGINEERING DEPARTMENT.
ED NON-WORKING & NON-PAYING SURFACES
TH MPR 1201-12
CTURE FOR CYLINDER ASSEMBLY 613938-1 MUST
SHOWN IN PLAN VIEW.
MBLIES SHALL WITHSTAND WITHOUT LEAKAGE OR
MATION THE FOLLOWING HYDROSTATIC TEST
FOR TEST SHALL BE PROVIDED BY MANUFACTURER)
ABLE REEVED AND CROSSHEAD ASSY 612457-1
RY POSITION. FILL DAMPER ACCUMULATOR
UCT STANDARD TEST PROCEDURE USED TO PROOF
GEAR DRIVE SYSTEM. CAUTION: PRESSURE IN
TOR 610200-1 MUST NOT EXCEED 5000 PSI.
BUFFER WITH OIL 91782-5 TO ℄ OF LIQUID SIGHT IND.
LOSURE SHALL BE DESIGNED AND SUPPLIED BY
VITY IN ACCORDANCE WITH NAEL(SI) DWG 612991.
LATIONS ON DIFFERENT VESSELS SEE APPLICABLE
WING.
SHEAVE INSTALLATION MAY BE NECESSARY
AVE ARRANGEMENT IS USED ON VESSELS
RETRACTABLE DECK SHEAVES.
EMENTS CAN BE USED INTERCHANGEABLY.
R SHEAVE ASSEMBLY IN A FIXED POSITION
L AS SHOWN IN DETAIL "B" TO BLOCK DAMPER
FULLY RETRACTED POSITION; CHARGE AND FILL
ATOR TO NORMAL OPERATING PRESSURE ℄

ONS ℄ DESIGNATIONS SHALL BE INTERPRETED
WITH HANDBOOK H-28 AND MIL-STD-9, RESPECTIVELY
RODUCED INTO SYSTEM. CROSSHEAD ASS'Y
TO CYLINDER ASSY 613938-1, SHALL MOVE WITHOUT
ERING UNDER A FORCE OF APPROX 200 LB.

ZONE	REVISIONS		
	SYM	DESCRIPTION	DATE
	(A)	CL "R" REV. NRN. ON DWG.; RELOCATED PIPING ON BUFFER ASSY. IN NOTES: ADDED NOTE 25. MASON	7K
	(B)	NRN, CL'R' CHG: ON DWG: RELOCATED BATTERY POSITION LIMIT SWITCH (614081-2) FROM BELOW TO ABOVE CROSSHEAD. IN TITLE BLOCK: ADDED "NON PRESSURIZED BUFFER" CED	7K

NEXT ASSEMBLY	QTY REQD	PART NUMBER	DESCRIPTION	STOCK	MATERIAL	SPECIFICATION	WT
613937-2	1	AN6227-52	PACKING 'O' RING				
-2	1	AN6227-19	PACKING 'O' RING				
-2	1	AN6227-17	PACKING 'O' RING				.2
-2	1	MS28778-6	GASKET 'O' RING				
-2	9	91782-5	ETHYLENE GLYCOL	(SEE NOTE 15)			40
-2	8	BB9816-6	WASHER, FLAT				
-2	4	E88963-9	PIN				1
-2	2	D878859-1	NUT, HEX				
-2	8	V67862-3	BOLT				1.6
-2	1	612457-1	CROSSHEAD ASSY				
-2	1	610207-1	ACCUM ASSY				
-2	1	613938-1	CYLINDER ASSY				
-2	1	511223-1	PANEL, CHARGING ASSY				
-1	1	614081-1	INDICATOR INSTL				
-2	1	502895-1	TRACK - SHEAVE				
2	1	410614-1	TRACK-SHEAVE				
-2	1	A410564-3	ADAPTER				
-2	4	410421-15	COUPLING	(SEE NOTE 24)			
-2	1	407473-1	FLANGE				
-2	5	A403485-25	90° ELBOW, SHORT RAD				
-2	2	320646-1	SHIM				
-2	2	320686-1	RAIL				
-2	1	318185-1	PLATE				
-2	2	318184-1	STUD				
2	1	317719-5	ORIFICE RING				
-2	1	A316301-3	RING SIL-BRAZE				
-2	1	316298-2	VALVE, BLEED ASSY				
-2	1	A316271-3	TAILPIECE				
-2	1	A316212-3	UNION NUT				
-2	18	A312872-9X	WELDING RING	(SEE NOTE 24)			
-2	8	1340-1420	SCREW				
-2	10FT	613937-5	PIPE (CUT TO SUIT)	4" x STRONG	STEEL	(SEE NOTE 20)	100
-2	2	-4	SHEAR PLATE	12 x 5 x 15-7/8 LG	STEEL	(SEE NOTE 19)	22
-2	1	-3	BOSS	1-1/8 DIA x 9-1/16 LG	STEEL	(SEE NOTE 19)	2
613937-1	2	-2	ASSEMBLY	(SEE NOTE 1)			56
		613937-1	DAMPER SHEAVE INSTL			(SEE NOTE 4)	200

LIST OF MATERIALS

613937 B C D E F G H

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± | DECIMALS ± .010 | ANGLES ± 1/2°

MECHANICAL FINISH SURFACE ROUGHNESS IN MICROINCHES
√ THIS SYMBOL, ENCIRCLING THE SURFACE ROUGHNESS OR SPECIFICATION IN MICROINCHES REPRESENTS THE MAXIMUM ACCEPTABLE ROUGHNESS, AND MAY BE PRODUCED BY ANY MECHANICAL PROCESS.
REF SPEC MIL-STD 10

THESE DOCUMENTS ALSO ARE A PART OF THE DRAWING
MPR 1201-12
MPR 1400

DESIGNED FOR MK 7 MOD 3

DRAWN	D. SCHRIER	12-2-66
CHECKED	P. EVANS	1-2-67
MATERIAL		
ANALYZED		
SUPERVISION	R. KNIGHT	1-5-67
APPROVED / APPROVED		DATE 1/6/67 DATE

ENGINEERING DEPARTMENT 000
NAVAL AIR ENGINEERING CENTER, PHILA., PA. 19112

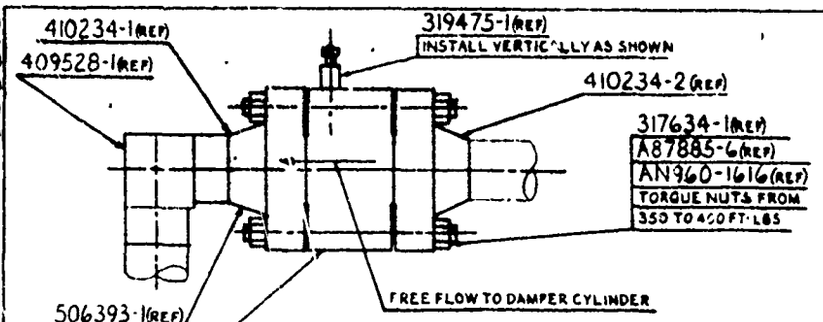
TITLE
DAMPER, SHEAVE
SHIPBOARD TYPICAL INSTALLATION
NON-PRESSURIZED BUFFER

SIZE H | CODE IDENT NO 00000 | DRAWING NO 613937
SCALE 1/8 = 1" | SHEET

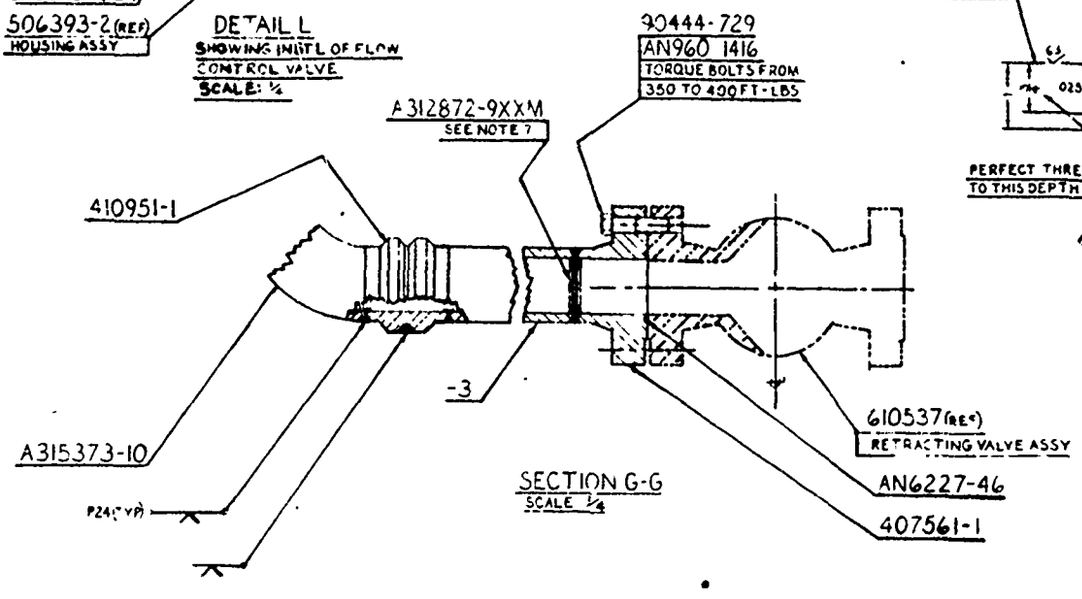
CLASSIFICATION OF CHARACTERISTICS
CRITICAL - C TO C
MAJOR - M101 TO M108
MINOR - ALL OTHER CHARACTERISTICS

613937 SHEET

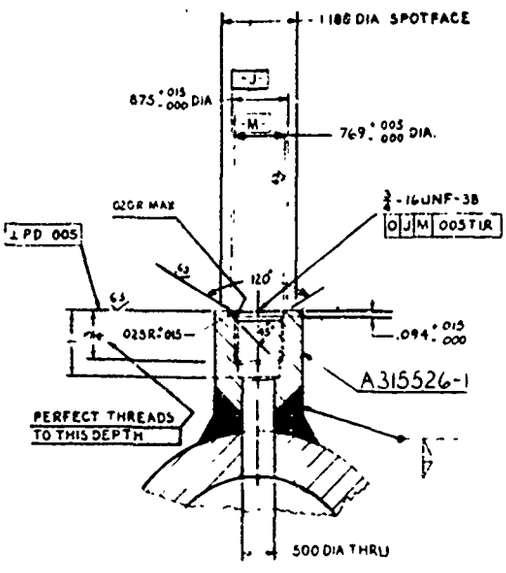
MD



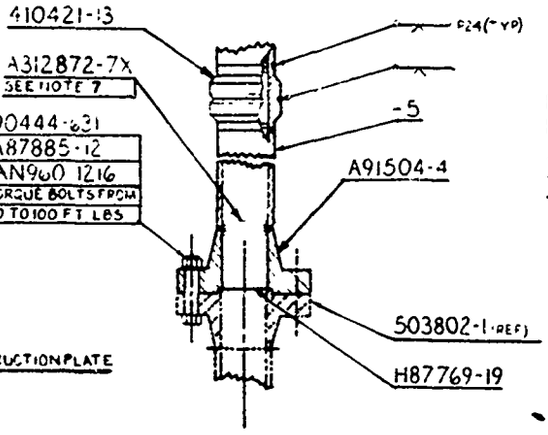
DETAIL L
SHOWING INLET OF FLOW CONTROL VALVE
SCALE: ½



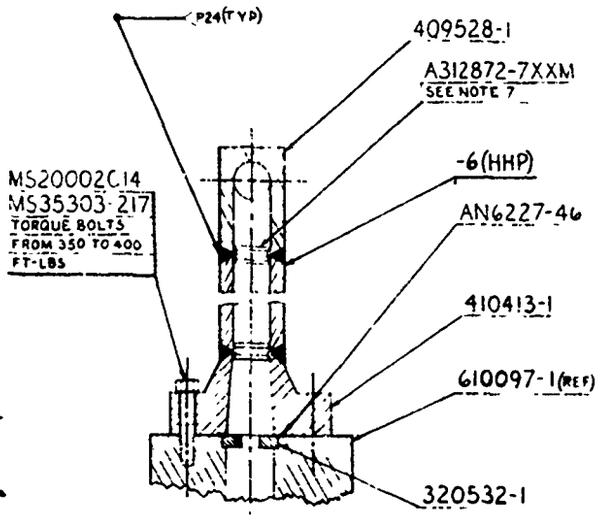
SECTION G-G
SCALE ¼



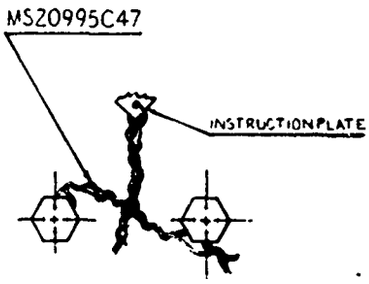
DETAIL H
SCALE 1/1



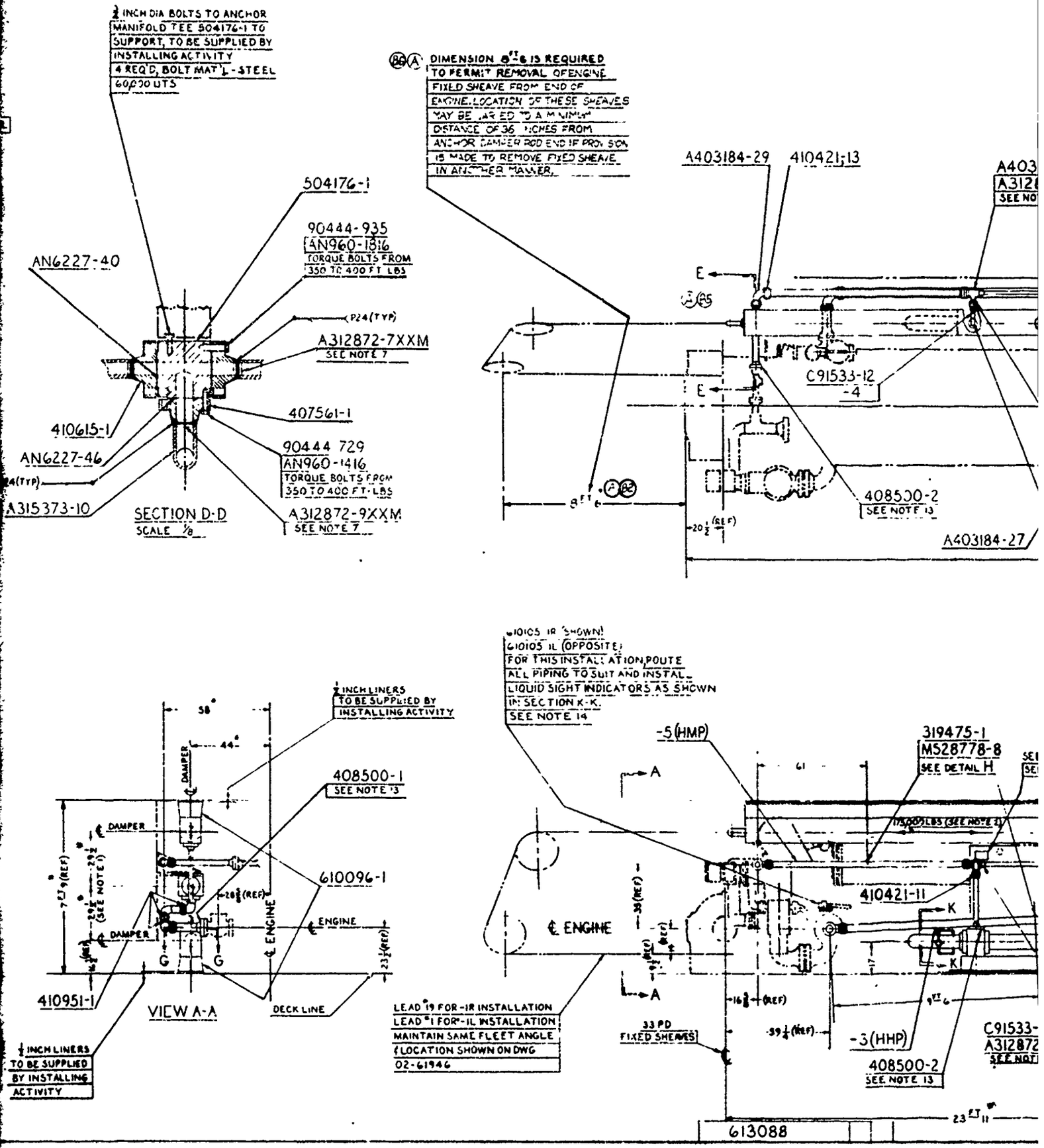
SECTION E-E
SCALE ¼



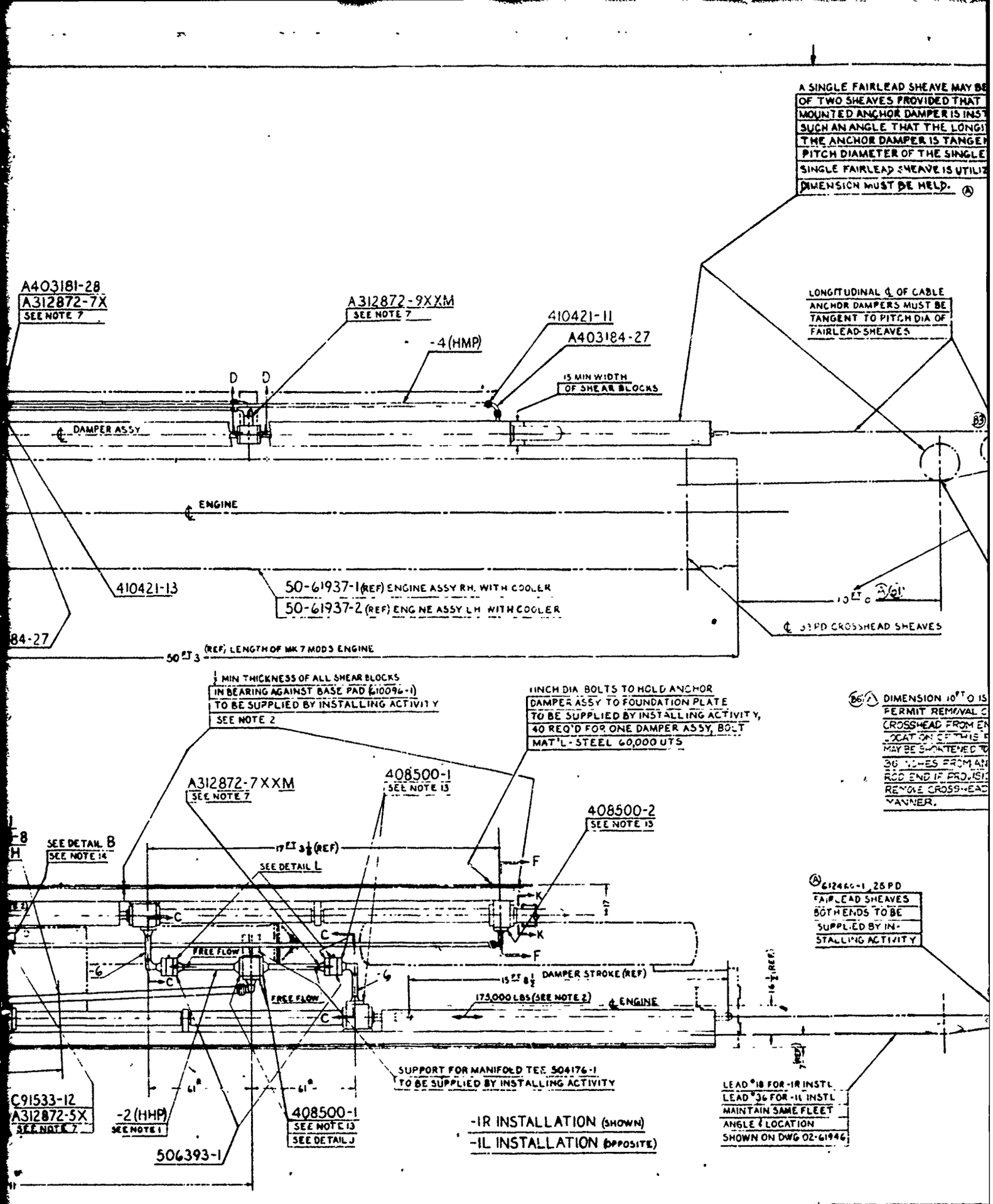
SECTION C-C
SCALE ½

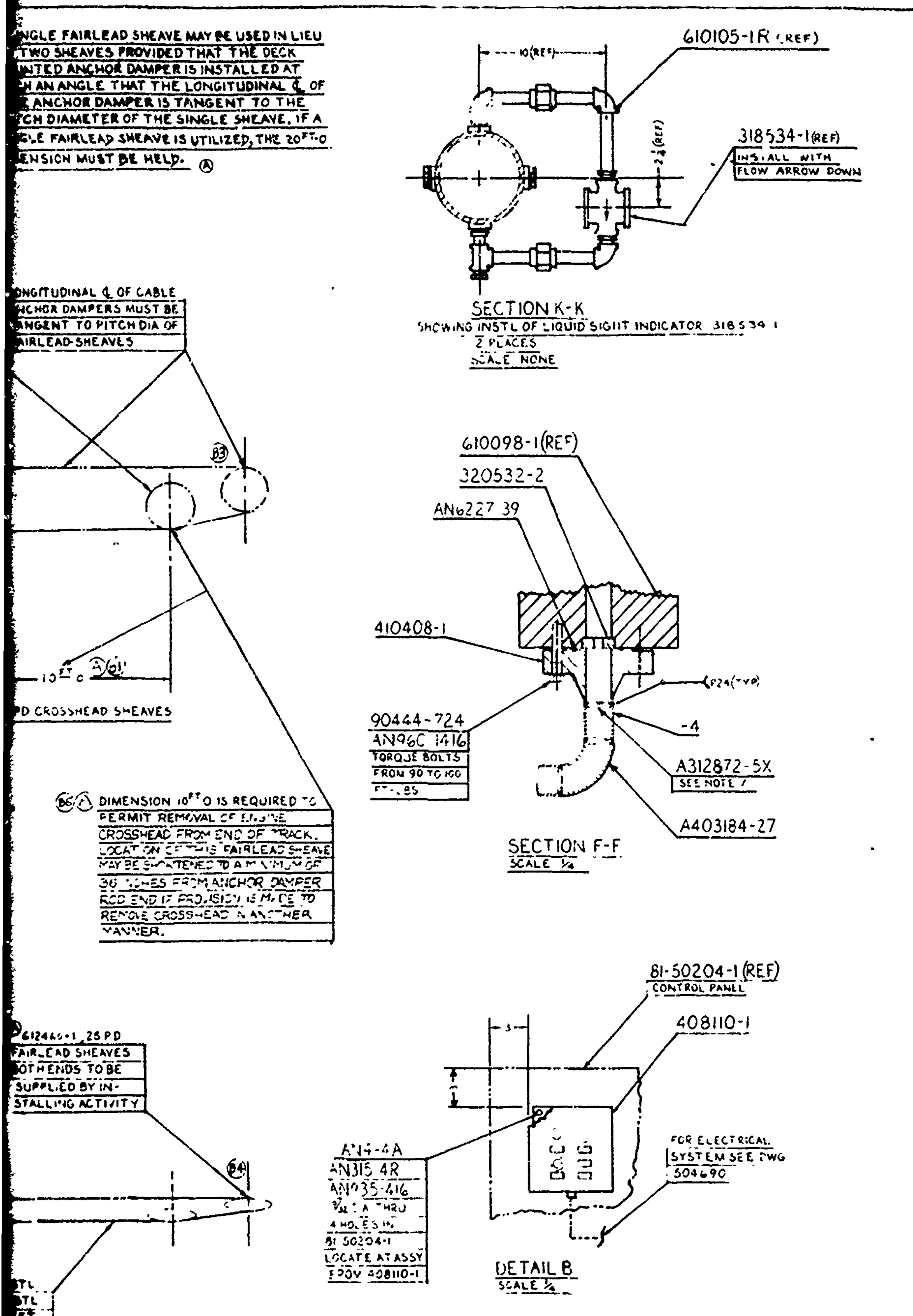


DETAIL J
TYPICAL SAFETY WIRING
SEE NOTES 3 & 13


¾ INCH DIA BOLTS TO ANCHOR MANIFOLD TEE 504176-1 TO SUPPORT, TO BE SUPPLIED BY INSTALLING ACTIVITY 4 REQ'D, BOLT MAT'L - STEEL 60,000 UTS
504176-1
90444-935
AN960-1816
TORQUE BOLTS FROM 350 TO 400 FT LBS
AN6227-40
(P24 (TYP)
A312872-7XXM
SEE NOTE 7
407561-1
410615-1
90444 729
AN960-1416
TORQUE BOLTS FROM 350 TO 400 FT-LBS
AN6227-46
(P24(TYP)
A315373-10
A312872-9XXM
SEE NOTE 7
SECTION D-D
SCALE ⅛
(B)(A) DIMENSION 8 FT 6 IS REQUIRED TO PERMIT REMOVAL OF ENGINE FIXED SHEAVE FROM END OF ENGINE. LOCATION OF THESE SHEAVES MAY BE ARRANGED TO A MINIMUM DISTANCE OF 36 INCHES FROM ANCHOR DAMPER ROD END IF PROVISION IS MADE TO REMOVE FIXED SHEAVE IN ANOTHER MANNER.
A403184-29
410421-13
A403
A312
SEE NO
E
C91533-12
-4
408500-2
SEE NOTE 13
8 FT 6
20½ (REF)
A403184-27
INCH LINERS TO BE SUPPLIED BY INSTALLING ACTIVITY
58
44
DAMPER
408500-1
SEE NOTE 13
DAMPER
610096-1
7 FT 9 (REF)
29½ (SEE NOTE 1)
20½ (REF)
ENGINE
DAMPER
G
G
23½ (REF)
410951-1
VIEW A-A
DECK LINE
INCH LINERS TO BE SUPPLIED BY INSTALLING ACTIVITY
(10105 IR SHOWN)
(10105 IL (OPPOSITE)
FOR THIS INSTALLATION, ROUTE ALL PIPING TO SUIT AND INSTALL LIQUID SIGHT INDICATORS AS SHOWN IN SECTION K-K.
SEE NOTE 14
-5 (HMP)
319475-1
MS28778-8
SEE DETAIL H
A
61
17,500 LBS (SEE NOTE 2)
410421-11
K
K
℄ ENGINE
30 (REF)
A
16⅜ (REF)
39½ (REF)
33 PD FIXED SHEAVES
LEAD 19 FOR -1R INSTALLATION
LEAD 1 FOR -1L INSTALLATION
MAINTAIN SAME FLEET ANGLE
℄ LOCATION SHOWN ON DWG
02-61946
-3 (HMP)
C91533-
A312872
SEE NOT
408500-2
SEE NOTE 13
23 FT 11
613088

2


A SINGLE FAIRLEAD SHEAVE MAY BE
OF TWO SHEAVES PROVIDED THAT
MOUNTED ANCHOR DAMPER IS INST
SUCH AN ANGLE THAT THE LONGI
THE ANCHOR DAMPER IS TANGEN
PITCH DIAMETER OF THE SINGLE
SINGLE FAIRLEAD SHEAVE IS UTILI
DIMENSION MUST BE HELD. A
A403181-28
A312872-7X
SEE NOTE 7
A312872-9XXM
SEE NOTE 7
410421-11
A403184-27
-4 (HMP)
15 MIN WIDTH
OF SHEAR BLOCKS
LONGITUDINAL ℄ OF CABLE
ANCHOR DAMPERS MUST BE
TANGENT TO PITCH DIA OF
FAIRLEAD SHEAVES
D
D
DAMPER ASSY
ENGINE
410421-13
50-61937-1 (REF) ENGINE ASSY RH. WITH COOLER
50-61937-2 (REF) ENGINE ASSY LH WITH COOLER
℄ 93 PD CROSSHEAD SHEAVES
50 FT 3 (REF) LENGTH OF MK 7 MOD 3 ENGINE
1/2 MIN THICKNESS OF ALL SHEAR BLOCKS
IN BEARING AGAINST BASE PAD (610096-1)
TO BE SUPPLIED BY INSTALLING ACTIVITY
SEE NOTE 2
1 INCH DIA BOLTS TO HOLD ANCHOR
DAMPER ASSY TO FOUNDATION PLATE
TO BE SUPPLIED BY INSTALLING ACTIVITY,
40 REQ'D FOR ONE DAMPER ASSY, BOLT
MAT'L - STEEL 60,000 UTS
DIMENSION 10 FT 0 IS
PERMIT REMOVAL O
CROSSHEAD FROM EN
LOCATION OF THIS
MAY BE SHORTENED TO
36 INCHES FROM AN
ROD END IF PROVISI
REMOVE CROSSHEAD
MANNER.
A312872-7XXM
SEE NOTE 7
408500-1
SEE NOTE 13
408500-2
SEE NOTE 13
SEE DETAIL B
SEE NOTE 14
17 FT 3 1/8 (REF)
SEE DETAIL L
F
K
C
FREE FLOW
-6
-8
612460-1, 28 PD
FAIRLEAD SHEAVES
BOTH ENDS TO BE
SUPPLIED BY IN-
STALLING ACTIVITY
15 FT 8 1/2 DAMPER STROKE (REF)
175,000 LBS (SEE NOTE 2)
℄ ENGINE
16 1/2 (REF)
SUPPORT FOR MANIFOLD TEE 504176-1
TO BE SUPPLIED BY INSTALLING ACTIVITY
C91533-12
A312872-5X
SEE NOTE 7
-2 (HMP)
SEE NOTE 1
61°
408500-1
SEE NOTE 13
SEE DETAIL J
506393-1
LEAD 18 FOR -1R INSTL
LEAD 36 FOR -1L INSTL
MAINTAIN SAME FLEET
ANGLE & LOCATION
SHOWN ON DWG 02-61946
-1R INSTALLATION (SHOWN)
-1L INSTALLATION (OPPOSITE)



NOTES.

1. THIS DWG SHOWS A TYPICAL DECK AND OVERH[...] FOR THE CABLE ANCHOR DAMPER (61009[...] ENGINE CYLINDER PRESSURE AS AN OPER[...] DAMPER ASSEMBLIES MAY VARY FROM TH[...] MARKED THUS *) BUT ON ALL INSTALLAT[...] MANIFOLD TEE (504176-1) TO DAMPER AS[...] BE EQUAL LENGTH. ANY VARIATION OF TH[...] MUST BE APPROVED BY THE NAVAL AIR ENGI[...]
2. THE MAXIMUM LOAD TRANSFERRED FROM[...] TO THE SHIPS STRUCTURE THRU THE SH[...] IN EITHER DIRECTION
3. BOLTS AND NUTS SHALL BE DRILLED FOR[...] WITH DWG NO 320662
4. ALL PIPE SHALL BE CLEANED, FLUSHED [...] IN ACCORDANCE WITH MK 7 AG SERVICE B[...]
5. ALL LINES SHALL BE MARKED "HHP" (HYDR[...] (HYDRAULIC MEDIUM PRESSURE) WITH DI[...] IDENTIFICATION TO BE PLACED NEAR VA[...] WHERE POSSIBLE, OTHER LINES WHERE[...] SHALL BE BLACK IN ACCORDANCE WITH[...] SIZE SHALL BE 1½ INCH
6. PAINT ALL EXPOSED NON-WORKING AND [...] WITH MPR 1201-12
7. WELDING PROCESS SHALL BE IN ACCORD[...] P-1 PIPING EXCEPT
   - a WELDING ROD SHALL BE IN ACCORDA[...]
   - b 100% RADIOGRAPH INSPECTION FOR [...]
   - c PIPING JOINTS (P-24) WELDED IN ACCO[...]
8. DIMENSIONS AND TOLERANCES ARE IN AC[...]
9. INSTALLATION [...] AND [...] IDENTI[...] ASSEMBLED OPPOSITE HANDED TO AGRE[...]
10. MATERIAL FOR [...] 3 SHALL BE IN AC[...] 4130 GRADE MP EXCEPT THAT DIMENS[...] ACCORDANCE WITH SPEC AW P 404
11. THREAD DIMENSIONS AND DESIGNATIONS [...] ACCORDANCE WITH HANDBOOK H28 AND N[...]
12. (C1) PIPING ASSY FOR [...] AND [...] SHALL BE SUB[...] HYDROSTATIC TESTS WITH NO LEAKAGE[...] TION ALL EQUIPMENT NECESSARY FOR [...] SHALL BE SUPPLIED BY THE INSTALLIN[...]
    - a DISCONNECT MANIFOLDS [...] END OF THE DAMPERS [...] THE AR[...] VALVE AND SUBJECT THESE MANI[...] TEST PRESSURE OF [...]
    - b DISCONNECT PIPING BETWEEN FL[...] OPERATING HEADS OF DAMPERS A[...] TO A HYDROSTATIC TEST PRESSU[...] PERIOD OF 15 MINUTES. FLOW CON[...] MUST BE INCLUDED IN THIS TE[...]
    - c REINSTALL MANIFOLDS TESTED [...] 12,500 PSI HYDROSTAT[...] ANCHOR DAMPERS [...] IN ACCORDANCE WITH [...] TO PROOF LOAD THE ARRE[...]
    - d DISCONNECT MANIFOLD [...] PISTON END OF THE CABLE ANCH[...] ACCUMULATOR PIPING OF THE EN[...] MANIFOLD TO A HYDROSTATIC TES[...] FOR A PERIOD OF 30 MINUTES
    - e REINSTALL MANIFOLD TESTED UN[...] HYDROSTATICALLY TO CUSHION[...] THE ARRESTING ENGINE ACCUMU[...] WITH NORMAL ARRESTING ENGINE[...]
13. ALL TORQUE JOINTS MUST BE SAFETY W[...] SAFETY WIRING SHALL BE IN ACCORDAN[...]
14. FOR BATTERY POSITION INDICATOR ELEC[...] NO 504690
15. -6 TUBE SPECIFICATIONS ARE AS FOLLO[...]
    - (a) MATERIAL TO BE IN ACCORDANCE W[...]
    - (b) STOCK SIZE 4.0D × 2.500 I.D. × 18 LG[...]
    - (c) HEAT TREAT TO BRINELL 180-220 [...] MIL-H-6875 DESIGN UTS 90,00[...]

REVISIONS

SYM	ZONE	DESCRIPTION	DATE	APPROVED
A		NRN. CL [illegible] ADDED 15"-0 DIM (2 PLACES). 20"-0 DIM (2 PLACES) WAS 10"-0 AND 6"-6" RESPECTIVELY. CHANGED NOTES PERTAINING TO THESE DIMS. 612460-1, 287.9 WAS 70-3349-1, 16 PR. CEP	[illegible]	[illegible]
B		SEE REVISION NOTICE	[illegible]	[illegible]

S A TYPICAL DECK AND OVERHEAD MOUNTED INSTALLATION
E ANCHOR DAMPER (610096-1) UTILIZING THE ARRESTING
DER PRESSURE AS AN OPERATING MEDIUM LOCATION OF
MBLIES MAY VARY FROM THAT SHOWN (SEE DIMENSIONS
(*) BUT ON ALL INSTALLATIONS PIPE RUNS FROM
(504176-1) TO DAMPER ASSEMBLIES (610096-1) MUST
GTH. ANY VARIATION OF THE INSTALLATION AS SHOWN
OVED BY THE NAVAL AIR ENGINEERING LABORATORY (SI)
LOAD TRANSFERRED FROM EACH CABLE ANCHOR DAMPER
STRUCTURE THRU THE SHEAR BLOCK S 175,000 LBS
CTION
TS SHALL BE DRILLED FOR LOCKWIRING IN ACCORDANCE
320662
LL BE CLEANED, FLUSHED AND PRESERVED AS REQUIRED
E WITH MK 7 AG SERVICE BULLETIN NO 168
LL BE MARKED "HHP" (HYDRAULIC HIGH PRESSURE) OR "HMP"
EDIUM PRESSURE) WITH DIRECTIONAL FLOW ARROWS
ON TO BE PLACED NEAR VALVES ON PRESSURE SIDE
BLE, OTHER LINES WHERE CLEARLY VISIBLE PAINT
ACK IN ACCORDANCE WITH SPEC MIL-P 15149 LETTER
E 1½ INCH
POSED NON-WORKING AND NON FAYING SURFACES IN ACCORDANCE
1-12
CESS SHALL BE IN ACCORDANCE WITH MIL-STD-278, CLASS
EPT
ROD SHALL BE IN ACCORDANCE WITH MPR 1400
OGRAPH INSPECTION FOR ALL WELDS IN ACCORD WITH SECT 9
NTS (PL4) WELDED IN ACCORDANCE WITH MIL-STD-22
ND TOLERANCES ARE IN ACCORDANCE WITH MIL STD-8
[illegible] AND [illegible] IDENTICAL PARTS, SOME PARTS ARE
OPPOSITE HANDED TO AGREE WITH THE ENGINE ASSY
[illegible] 3 SHALL BE IN ACCORDANCE WITH MPR 1 CLASS
MP EXCEPT THAT DIMENSIONS AND TOLERANCES SHALL BE IN
WITH SPEC WW P 404
SIONS AND DESIGNATIONS SHALL BE INTERPRETED IN
WITH HANDBOOK H28 AND MIL-STD-[illegible] RESPECTIVELY
[illegible] AND [illegible] SHALL BE SUBJECTED TO THE FOLLOWING
TESTS WITH NO LEAKAGE OR PERMANENT DEFORMA
[illegible] NECESSARY FOR PERFORMANCE OF TESTS
[illegible] BY THE INSTALLING ACTIVITY
ECT MANIFOLDS [illegible] BETWEEN THE OPERATING PISTON
THE DAMPERS AND THE ARRESTING ENGINE RETRACTION
AND SUBJECT THESE MANIFOLDS TO A HYDROSTATIC
RESSURE OF [illegible] FOR A PERIOD OF 5 MINUTES
NECT PIPING BETWEEN FLOW CONTROL VALVES AND
ING HEADS OF DAMPER AND SUBJECT THESE PORTIONS
DROSTATIC TEST PRESSURE OF [illegible] PSI FOR A
OF 15 MINUTES FLOW CONTROL VALVES [illegible] 393 2
E INCLUDED IN THIS TEST
ALL MANIFOLDS TESTED UNDER [illegible] AND [illegible] APPLY
[illegible] HYDROSTATIC [illegible] OPERATING END OF [illegible]
DAMPERS [illegible]
[illegible]
F LOAD THE [illegible] AND [illegible]
NECT MANIFOLD [illegible] THE CUSHIONING
END OF THE CABLE ANCHOR [illegible] AND THE
ULATOR PIPING OF THE [illegible] SUBJECT THIS
[illegible] TO A HYDROSTATIC TEST [illegible] OF 500 PSI
RIOD OF 30 MINUTES
LL MANIFOLD TESTED UNDER 2a APPLY 1000 PSI
STATICALLY TO CUSHIONING END OF DAMPERS THRU
RESTING ENGINE ACCUMULATOR PIPING IN ACCORDANCE
RMAL ARRESTING ENGINE TEST PROCEDURE
OINTS MUST BE SAFETY WIRED AS SHOWN IN DETAIL
NG SHALL BE IN ACCORDANCE WITH MS33540
POSITION INDICATOR ELECTRICAL SYSTEM SEE DWG

CIFICATIONS ARE AS FOLLOWS
L TO BE IN ACCORDANCE WITH MPR [illegible], CL 4130 GR MP
IZE 4 OD × 2 300 ID × 18.6
EAT TO BRINELL 180-220 IN ACCORDANCE WITH
875. DESIGN UTS 90,000 PSI

REQ'D PER ASSY	PART NUMBER	DESCRIPTION	STOCK	MATERIAL	SPECIFICATION
16	MS35303-217	SCREW			
2	MS28778-8	GASKET			
[illegible]	MS20995C47	LOCKWIRE			
16	MS20002C14	WASHER			
4	AN6227-46	PACKING-O RING			
2	AN6227-40	PACKING O RING			
2	AN6227-39	PACKING O RING			
12	AN960-1816	WASHER			
[illegible]	AN960-1416	WASHER			
8	AN960-1216	WASHER			
4	AN935 416	LOCKWASHER			
4	AN315-4R	NUT			
4	AN6-4A	BOLT			
1	A403184 29	ELBOW			
3	A403184-27	ELBOW			
1	A403181-28	TEE			
2	A315526-1	BOSS-WELDING			
3	A315373-10	ELBOW			
11	A312872-9XXM	RING-WELDING			
[illegible]	A312872-7XXM	RING-WELDING			
[illegible]	A312872-7X	RING-WELDING			
13	A312872-5X	RING-WELDING			
2	C91533-12	REDUCER			
1	A91504-4	FLANGE			
12	90444-935	BOLT			
16	90444-729	BOLT			
16	90444-724	BOLT			
8	90444-631	BOLT			
8	A87885-12	NUT			
1	H87769-19	GASKET			
2	610096-1	CABLE ANCHOR DAMPER ASSY			
1	610105 [illegible]-1R	BATTERY POSITIONER INST'L			
2	506393-1	VALVE-FLOW CONTROL			
1	504176-1	MANIFOLD TEE			
4	410991-1	COUPLING-WELDING			
2	410415-1	FLANGE			
4	410421-13	COUPLING-WELDING			
3	410421-11	COUPLING-WELDING			
2	410413-1	FLANGE			
2	410408-1	FLANGE			
2	409528-1	ELBOW			
3	408500-2	INSTRUCTION PLATE			
[illegible]	408500-1	INSTRUCTION PLATE			
1	405110-1	LIGHT BOX ASSY			
2	407561-	FLANGE			
2	320532-2	PLATE ORIFICE			
2	320532-1	PLATE ORIFICE			
2	319475-1	VENT VALVE ASSY			
2	613088-6	TUBE	CUT TO SUIT	STEEL	SEE NOTE 3
1	-5	PIPE-3IPS × 14"	CUT TO SUIT	STEEL	WW-P-404 CLASS B SxS
	-4	PIPE-2IPS × 30"	CUT TO SUIT	STEEL	WW-P-404 CLASS B, SxS
1	-3	PIPE-4IPS XXSTG × 24"	CUT TO SUIT	STEEL	SEE NOTE 10
	-2	PIPE 3IPS XXSTG × 10"	CUT TO SUIT	STEEL	SEE NOTE 10
	613088 [illegible]-1R	DAMPER INSTALLATION (SEE NOTE 9)			

LIST OF MATERIALS

613088

CLASSIFICATION OF CHARACTERISTICS
CRITICAL - C1 TO C[illegible]
MAJOR - M[illegible] TO M[illegible]
MINOR - ALL OTHER CHARACTERISTICS

MPR 1
MPR 1201
MPR 1400

DRAWN: RADITZ 12 OCT 66
CHECKED: [signature]
APPROVED: [signature]
NEXT ASSY / USED ON: MK 7 MOD 3

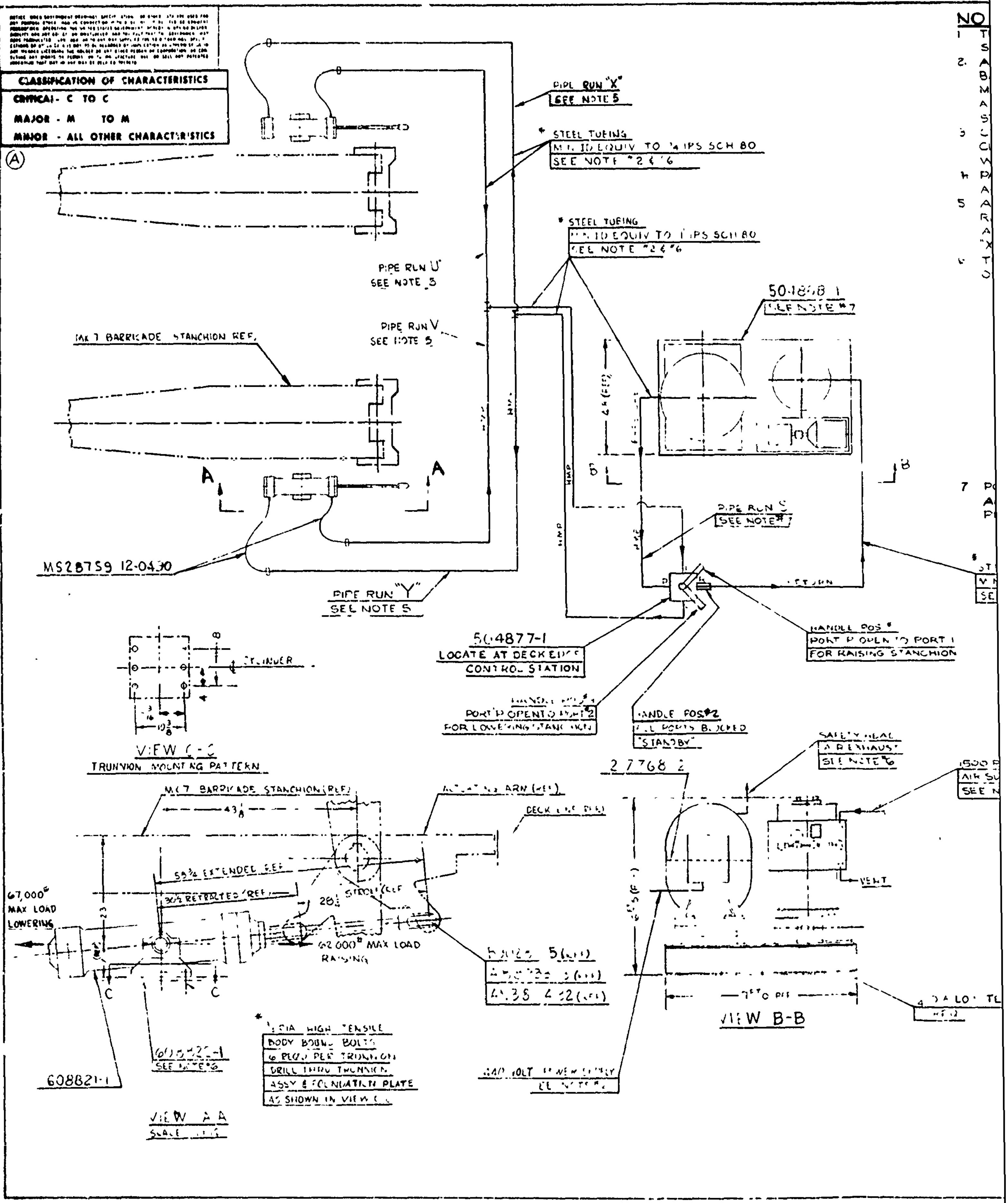
NAVAL AIR ENGINEERING LABORATORY (SI)
NAVAL AIR ENGINEERING CENTER, PHILA., PA. 19112

TITLE
DAMPER INSTALLATION
CABLE ANCHOR
DECK AND OVERHEAD MOUNTED

SIZE H — DRAWING NO. 613088
SCALE: [illegible] & AS NOTED

FIGURE 3

988402



CLASSIFICATION OF CHARACTERISTICS
CRITICAL - C TO C
MAJOR - M TO M
MINOR - ALL OTHER CHARACTERISTICS
PIPE RUN "X" SEE NOTE 5
* STEEL TUBING
SEE NOTE
PIPE RUN U SEE NOTE 5
PIPE RUN V SEE NOTE 5
MK 7 BARRICADE STANCHION REF.
A
A
MS28759 12-0430
PIPE RUN "Y" SEE NOTE 5
50-4877-1
LOCATE AT DECK EDGE CONTROL STATION
PIPE RUN S SEE NOTE
HANDLE POS
FOR RAISING STANCHION
FOR LOWERING STANCHION
HANDLE POS#2
"STANDBY"
VIEW C-C
TRUNNION MOUNTING PATTERN
MK 7 BARRICADE STANCHION (REF)
ACTUATING ARM (REF)
DECK LINE (REF)
59¾ EXTENDED REF
30½ RETRACTED REF
67,000# MAX LOAD LOWERING
62,000# MAX LOAD RAISING
C
C
608821-1
SEE NOTE 6
BODY BOUND BOLTS
6 REQ'D PER TRUNNION
DRILL THRU TRUNNION
ASSY & FOUNDATION PLATE
AS SHOWN IN VIEW C-C
VIEW A-A
2 7768 2
VIEW B-B
VENT
NO

SYM	DESCRIPTION	DATE	APPROVAL
REVISIONS			
(A)	N.R.N CLASS 'XR' ADDED CLASS. OF CHAR.	6/6/67	

NOTES

1. THIS DRAWING SHOWS THE ARRANGEMENT OF A HYDRAULIC CONTROL SYSTEM FOR RAISING AND LOWERING THE MK7 BARRICADE STANCHIONS.
2. ALL PIPING COMPONENTS SHALL BE SUITABLE FOR USE WITH WATER BASE HYDRAULIC FLUID, SPECIFICATION MIL-H-22072. ALL PIPING MARKED HMP (HYDRAULIC MEDIUM PRESSURE) SHALL BE SUITABLE FOR A WORKING PRESSURE OF 1500 PSI AND SUBJECTED TO A HYDROSTATIC TEST OF 2250 PSI.
3. CYLINDERS, PIPE LINES, AND ACCUMULATORS SHALL BE THOROUGHLY CLEANED AS NECESSARY TO INSURE REMOVAL OF ALL METALLIC WASTE AND FOREIGN MATTER PRIOR TO FILLING WITH FLUID.
4. PAINT ALL EXPOSED NON WORKING AND NON FAYING SURFACES IN ACCORDANCE WITH MPR 1201-12.
5. ALL PIPING BETWEEN FLEXIBLE HOSE AND CONTROL VALVE TO BE RUN TO BEST ADVANTAGE OF SHIP, BUT LENGTH OF PIPE RUNS "U" AND "V" SHALL BE OF APPROXIMATE EQUAL LENGTH AND RUNS "X" AND "Y" SHALL BE OF APPROXIMATE EQUAL LENGTH AS SHOWN.
6. THE INSTALLING ACTIVITY SHALL FURNISH AND INSTALL UNDER ITS OWN COGNIZANCE THE FOLLOWING ITEMS.
   (a) A 1500 PSI AIR SUPPLY LINE WITH A STRAINER FOR CHARGING THE ACCUMULATOR
   (b) A 440 VOLT, 60 CYCLE, THREE PHASE POWER SUPPLY LINE FOR THE OPERATION OF A 5 HP ELECTRIC MOTOR; WITH POWER SWITCH (AND CIRCUIT PROTECTION AS REQUIRED) MOUNTED WITHIN READY ACCESS OF POWER PACKAGE.
   (c) FOUNDATION STRUCTURE FOR SUPPORT TRUNNION TO WITHSTAND LOADS INDICATED IN VIEW A-A
   (d) ALL ITEMS MARKED THUS * INCLUDING BOLTS SUPPORT BRACKETS, PIPE, PIPE FITTINGS, PIPE SUPPORTS
   (e) SUITABLE DISCHARGE LINE FOR SAFETY HEAD AIR EXHAUST LINE
7. POWER PACKAGE 504868-1 SHALL BE LOCATED TO BEST ADVANTAGE OF SHIPS, HOWEVER, LOCATION SHALL BE MADE TO PROVIDE FOR THE SHORTEST POSSIBLE PIPE RUN'S.

B

*STEEL TUBING
N ID EQUIV TO IPS SCH 80
SEE NOTE *2 & *6

*
…N TO PORT
…STANCHION

REFERENCES
POWER PACKAGE ELECTRICAL INSTALLATION — — — — DWG 504867
POWER PACKAGE PIPING ASSEMBLY — — — — — — — — DWG 608957

1500 PSI MIN.
AIR SUPPLY
SEE NOTE *6

504866

…TENSILE …TS

504866-1	4	MS2…	HOSE ASSY			
504866-1	2	608822-1	TRUNNION ASSY			102
	2	608821-1	CYLINDER ASSY			582
	1	504877-1	VALVE INSTALLATION			
	1	504868-1	POWER PACKAGE			
504866-1	110	2 77 8 2	HYDRAULIC FLUID			
		504866-1	BARRICADE STANCHION INSTALLATION			SEE NOTE 4

BARRICADE STANCHION HYDRAULIC CONTROL INSTALLATION

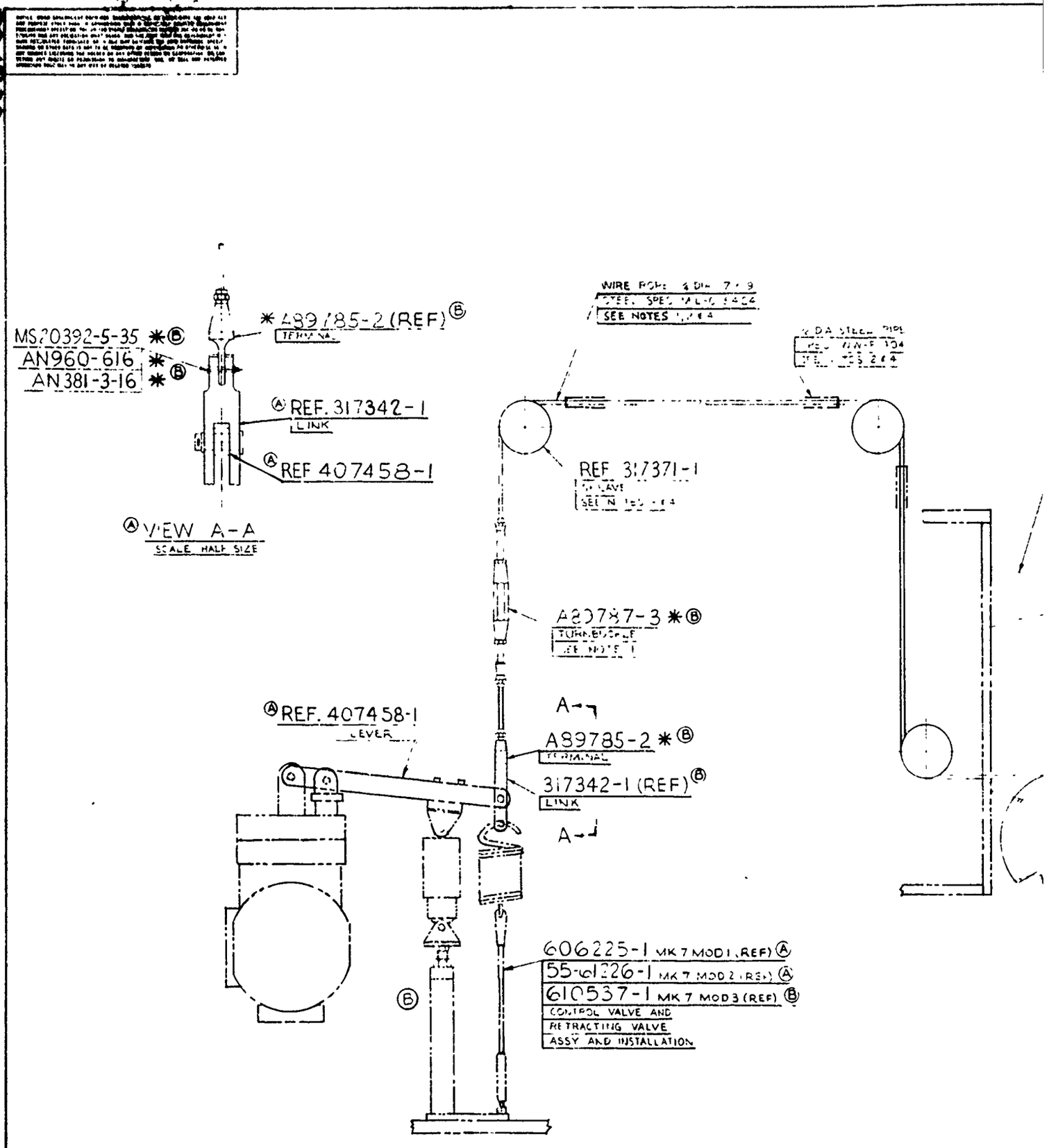
MK7 BARRICADE

NAVAL AIR ENGINEERING FACILITY

NAVAL AIR ENGINEERING CENTER

504866

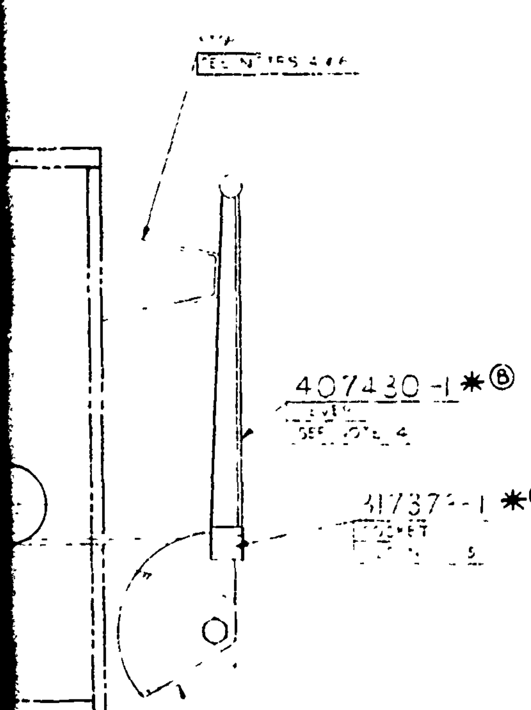
2


MS20392-5-35 *Ⓑ
AN960-616 *
AN381-3-16 *Ⓑ
*A89785-2 (REF)Ⓑ
TERMINAL
Ⓐ REF. 317342-1
LINK
Ⓐ REF 407458-1
Ⓐ VIEW A-A
SCALE HALF SIZE
WIRE ROPE
SEE NOTES
REF 317371-1
A89787-3 *Ⓑ
TURNBUCKLE
Ⓐ REF. 407458-1
LEVER
A89785-2 *Ⓑ
TERMINAL
317342-1 (REF)Ⓑ
LINK
A
A
606225-1 MK 7 MOD 1 (REF) Ⓐ
55-610226-1 MK 7 MOD 2 (REF) Ⓐ
610537-1 MK 7 MOD 3 (REF) Ⓑ
CONTROL VALVE AND
RETRACTING VALVE
ASSY AND INSTALLATION
Ⓑ

SYM	DESCRIPTION	DATE	APPROVAL
A	[illegible]	[illegible]	[illegible]
(B)	ON DWG: CORRECTED PICTURE BY ADDING SHOCK ABSORBER. FOR INFORMATION ON MISCELANEOUS CHANGES, SEE REVISION SLIP. J.C.	1/12/68	[illegible]

NOTES

1. NO TURNBUCKLES OR SPLICES IN CABLE TO BE LOCATED WITHIN 6 IN OF SHEAVES BEFORE RETRACTING AND AFTER RETRACTING.
2. CONTROL CABLES ARE TO BE ENCASED IN ½" STD PIPE GUARDS, WITH SUITABLE PIPE SUPPORTS AS REQ'D.
3. QUANTITY OF SHEAVES & METHOD OF MOUNTING TO BE DETERMINED BY INSTALLING ACTIVITY.
4. (B) SHEAVES, CABLES, FAIRLEADS, FAIRLEAD SUPPORTS, MOUNTING BRACKETS FOR SHEAVE ASSEMBLIES 317371-1, STOP AND MOUNTING BRACKETS FOR DECK EDGE CONTROL LEVER 407430-1, REQUIRED FASTENERS AND ALL PARTS MARKED WITH * ARE TO BE SUPPLIED BY INSTALLING ACTIVITY.
5. WIRE ROPE TO BE SECURED IN SOCKET 317373-1 AT INSTALLATION. FOR POURING INSTRUCTIONS, SEE MK 7 A.G. SERVICE BULLETIN # 97
6. STOP TO BE INSTALLED WITH LEVER IN VERTICAL POSITION.
7. PAINT IN ACCORDANCE WITH [illegible] 20-[illegible] ALL OVER, EXCEPT [illegible]



NEXT ASSY	REQD	PART NO.	DESCRIPTION
504206-1	1	MS20392-5-35	PIN-FLAT HD
	1	AN960-616	WASHER FLAT
	1	AN381-3-6	COTTER PIN
	1	AN9[illegible]-3	TURNBUCKLE
		AN97[illegible]-2	TERMINAL
	1	407430-1	LEVER
504206-1	1	317373-1	SOCKET
(B) ~~[illegible]~~	~~1~~	~~[illegible]~~	~~LINK~~
		504206-1	CONTROL INSTALLATION

SEE NOTE 7

DRAWN	C. CASEY 30 JUL 59
	MANCINI 15AUG59
	[illegible] 11/1/59

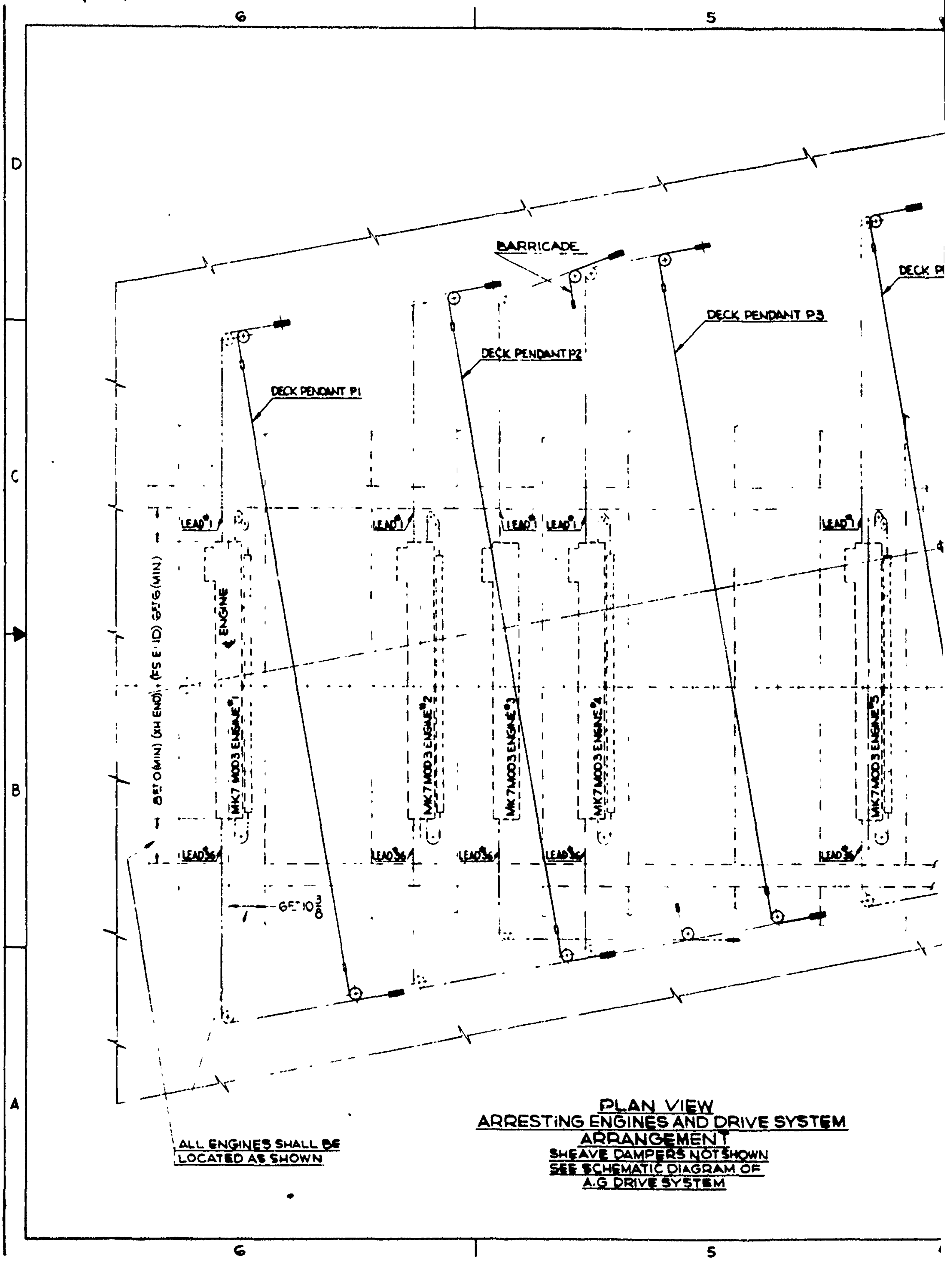
CONTROL INSTALLATION
MANUAL TYPE RETRACTING VALVE
CONSTANT RUNOUT
INCREASED CAPACITY

NAVAL AIR ENGINEERING FACILITY
(SHIP INSTALLATIONS)
NAVAL AIR MATERIAL CENTER
PHILADELPHIA, PA

82 5[illegible] SCZ612 (B)
MK 7 MOD1, MOD 2 & MOD 3
SCALE 1/2 & AS NOTED

504206

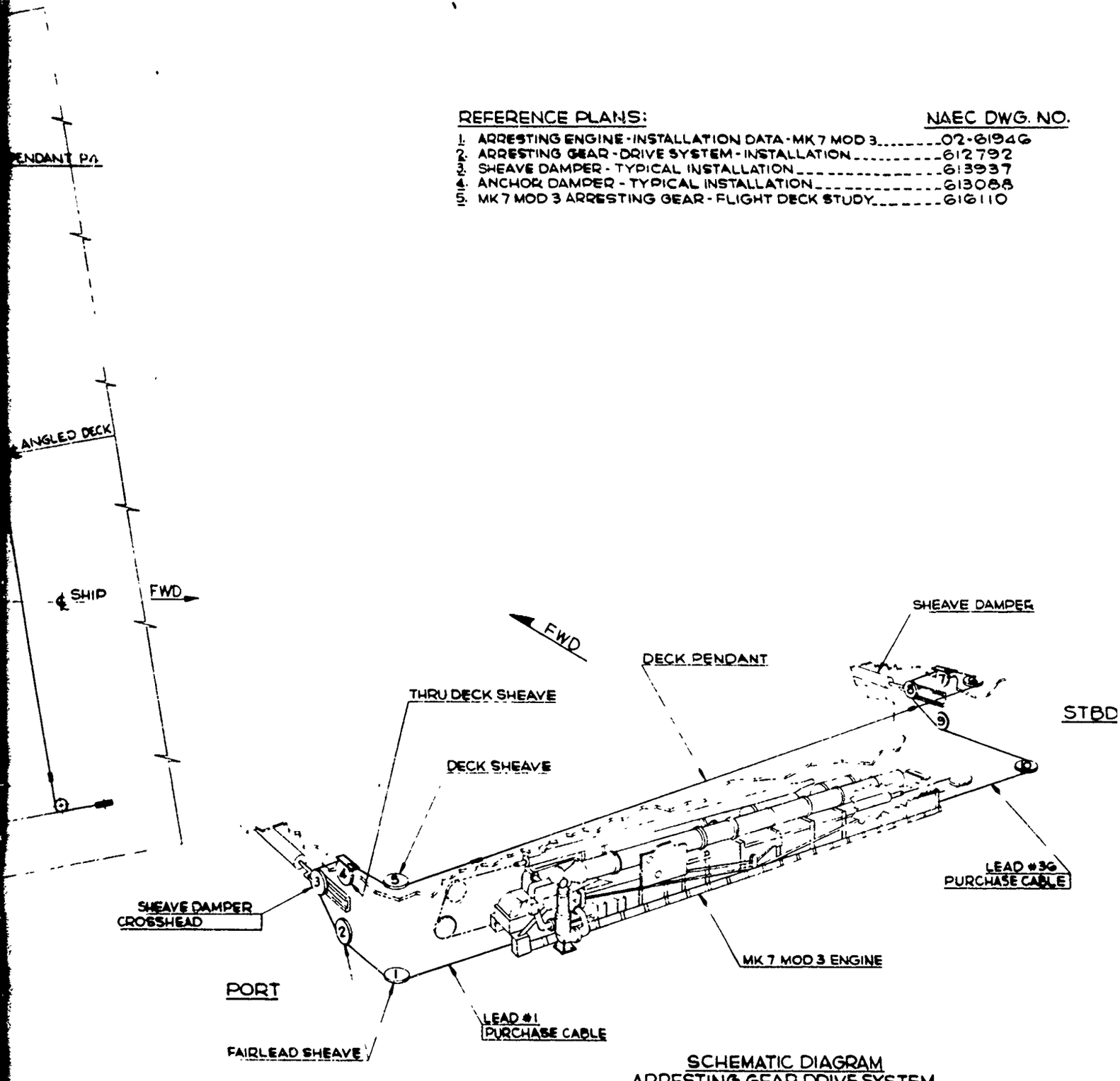
504206



PLAN VIEW
ARRESTING ENGINES AND DRIVE SYSTEM
ARRANGEMENT
SHEAVE DAMPERS NOT SHOWN
SEE SCHEMATIC DIAGRAM OF
A.G DRIVE SYSTEM

REFERENCE PLANS:

	NAEC DWG. NO.
1. ARRESTING ENGINE - INSTALLATION DATA - MK 7 MOD 3	02-61946
2. ARRESTING GEAR - DRIVE SYSTEM - INSTALLATION	612792
3. SHEAVE DAMPER - TYPICAL INSTALLATION	613937
4. ANCHOR DAMPER - TYPICAL INSTALLATION	613088
5. MK 7 MOD 3 ARRESTING GEAR - FLIGHT DECK STUDY	616110



SCHEMATIC DIAGRAM
ARRESTING GEAR DRIVE SYSTEM
SEE NOTE #3A

616363

2

NOTES:

1. THIS DRAWING SHOWS THE OPTIMUM MARK 7 MOD 3 ARRESTING ENGINE AND DRIVE SYSTEM ARRANGEMENT AS PLANNED FOR FUTURE AIRCRAFT CARRIERS.
2. AN ARRESTING ENGINE COMPARTMENT SHALL BE A MINIMUM OF FOUR (4) FRAMES (16 FT 0) FOR THE SUITABLE INSTALLATION OF ONE (1) ENGINE.
3. THIS DRAWING DEPICTS A PROPOSED ARRANGEMENT OF DESIRED ARRESTING ENGINE LOCATIONS. THE PREMISE FOR LOCATION WAS BASED ON THE FOLLOWING.
   A. TO PROVIDE AN OPTIMUM DRIVE SYSTEM ARRANGEMENT WITH UTILIZATION OF A MINIMUM OF TEN (10) SHEAVES FOR EACH INDIVIDUAL SYSTEM.
   B. AS A PRECAUTIONARY MEASURE, CONSIDERING AS PARAMOUNT THE SAFETY OF FLIGHT DECK PERSONNEL, PREVIOUS OCCURRENCES OF CABLE BREAKAGE HAVE INDICATED BREAKAGE AT THE 28 INCH P.D. ENGINE SHEAVES WITH CONSEQUENT CABLE WHIPLASH RESULTING ON THE FLIGHT DECK AT THE OPPOSITE SIDE OF THE ARRESTING ENGINE'S 28 INCH P.D. SHEAVES. CABLE BREAKAGE FROM THE 28 INCH P.D SHEAVES (LEAD NO. 3G) WILL RESULT IN CABLE WHIPLASH TO THE PORT SIDE OF THE FLIGHT DECK, AWAY FROM THE CARRIER ISLAND, IN AN AREA UNLIKELY TO CAUSE INJURY TO PERSONNEL.

. NO.

ER

STBD.

D #3G
CABLE

ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVED

NEXT ASSEMBLY	QTY REQD	PART NUMBER	DESCRIPTION	STOCK	MATERIAL	SPECIFICATION	UNIT WT	

LIST OF MATERIALS

CLASSIFICATION OF CHARACTERISTICS
CRITICAL — C TO C
MAJOR — M TO M
MINOR — ALL OTHER CHARACTERISTICS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS — DECIMALS ±.010 ANGLES ±½°

THESE DOCUMENTS ALSO ARE A PART OF THIS DRAWING

MECHANICAL FINISH SURFACE ROUGHNESS IN MICROINCHES
✓ SURFACE ROUGHNESS IN ACCORDANCE WITH ASA B46

DRAWN	P. Bonnin	14 Oct 64
CHECKED	TC YATES	21 Oct 64
MATERIAL	—	—
ANALYZE	—	—
SUPERVISOR	[signature]	11/6/64
APPROVED	[signature]	

DESIGNED FOR MK 7 MOD 3

REF

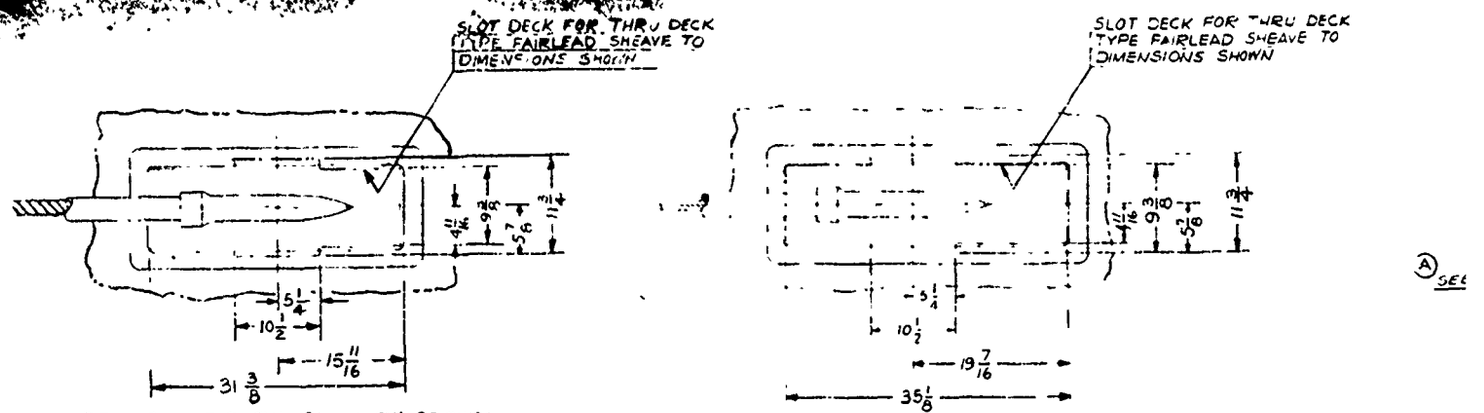
ENGINEERING DEPARTMENT (EI)
NAVAL AIR ENGINEERING CENTER PHILA PA 19112

TITLE ARRESTING ENGINE LOCATIONS AND DRIVE SYSTEM ARRANGEMENT MK 7 MOD 3 ARRESTING GEAR PROPOSED

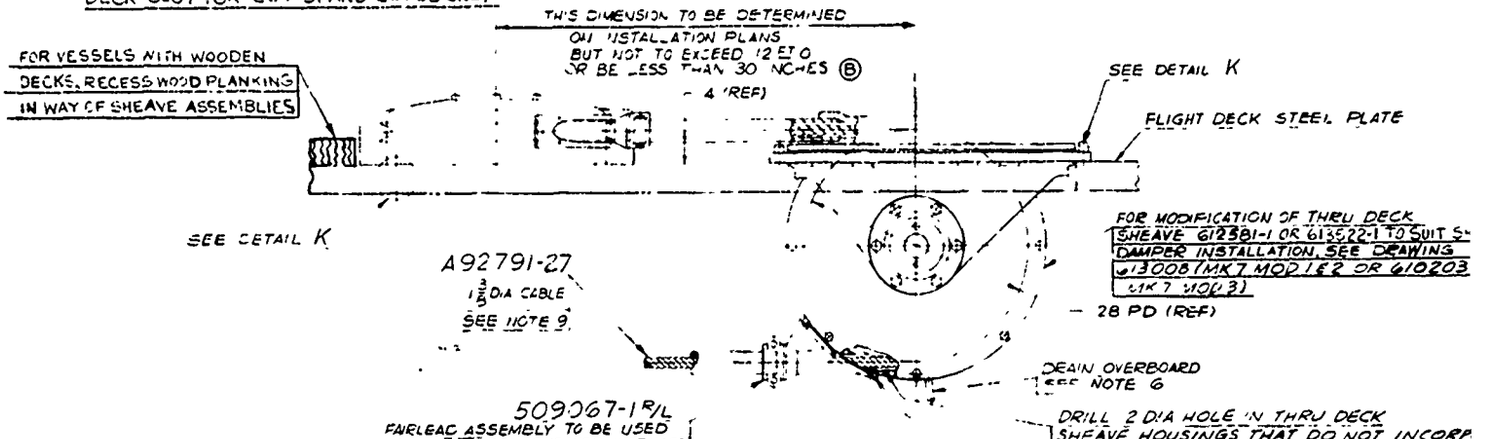
SIZE H | CODE NO | DRAWING NO. 616363

SCALE

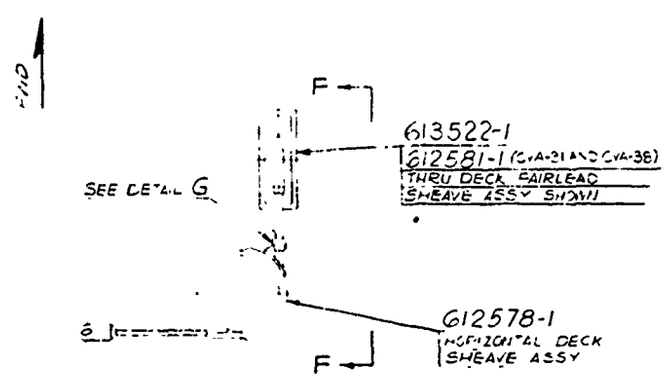
616363



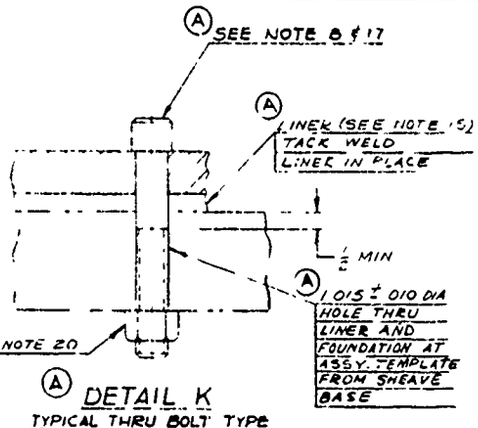
DECK SLOT FOR CVA-31 AND CVA-38 ONLY



VIEW F-F
SCALE 1/8

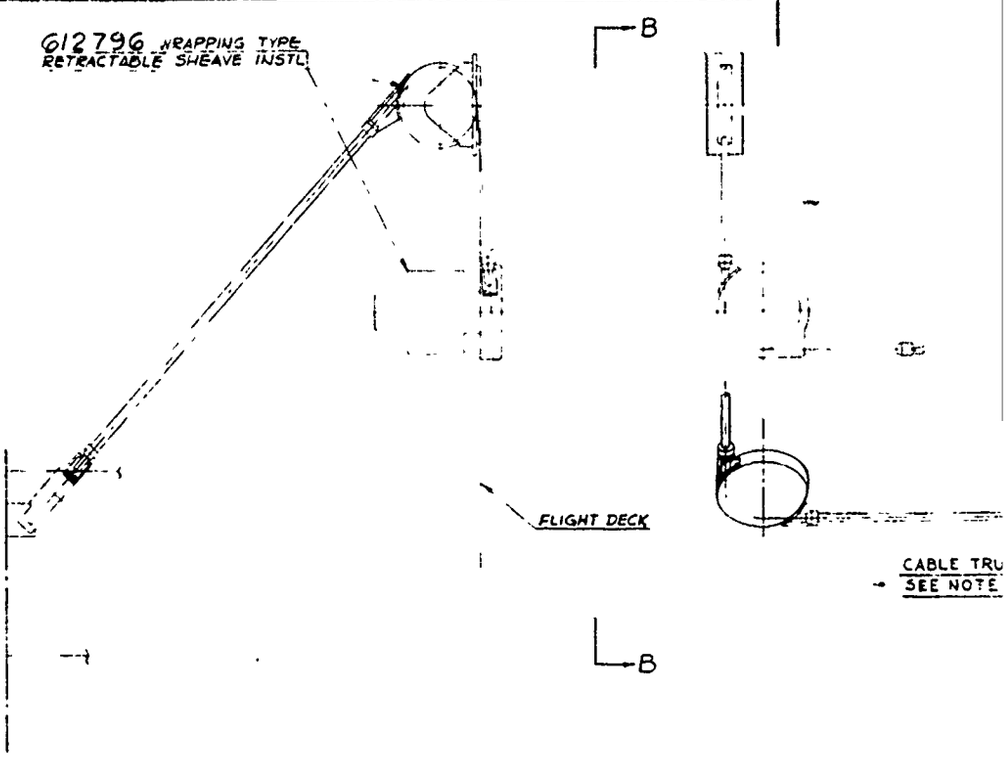


DETAIL H
HORIZONTAL DECK SHEAVE
TYPICAL INSTALLATION



DETAIL K
TYPICAL THRU BOLT TYPE
ANCHORAGE FOR SHEAVE ASSYS
SCALE 1/2

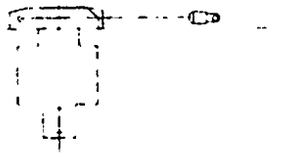
612796 WRAPPING TYPE
RETRACTABLE SHEAVE INSTL

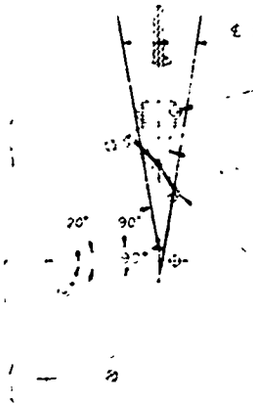


VIEW B-B

SHEAVE

RPORATE
ATIONS





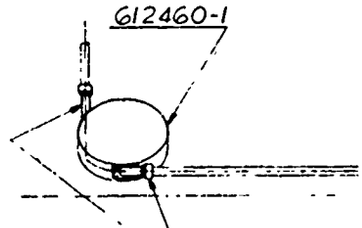
509071-1 R/L
FAIRLEAD ASSY TO BE USED ON
ALL HORIZONTAL DECK SHEAVES
SEE NOTE 10

DRILL 2 DIA HOLE IN ALL
HORIZONTAL DECK SHEAVE HOUSINGS
LOCATE TO SUIT INSTALLATION
WITHIN 20° AS SHOWN

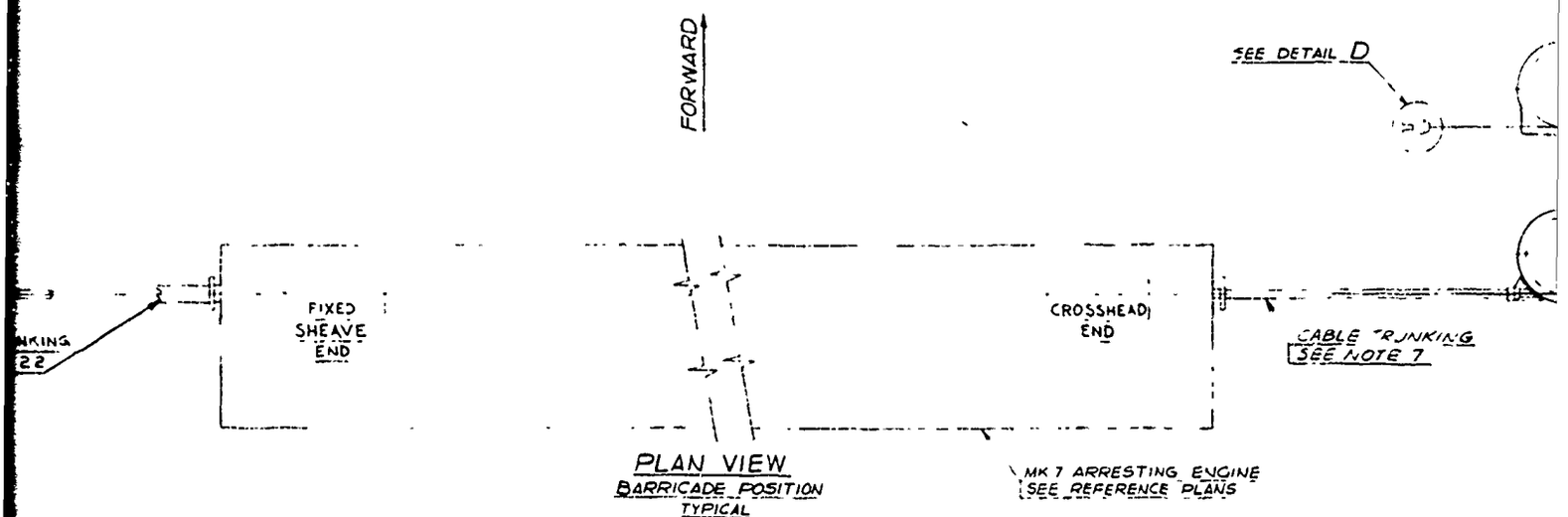
MS 20074-06-11 BOLT
MS 20995C47 WIRE, LOCK (SEE NOTE 3)
$\frac{3}{8}$-16 UNC-3B $\frac{3}{4}$ DEEP
6 HOLES (SEE NOTE 4)
TEMPLATE FROM 509071-1 R/L

DETAIL G
SCALE 1/8

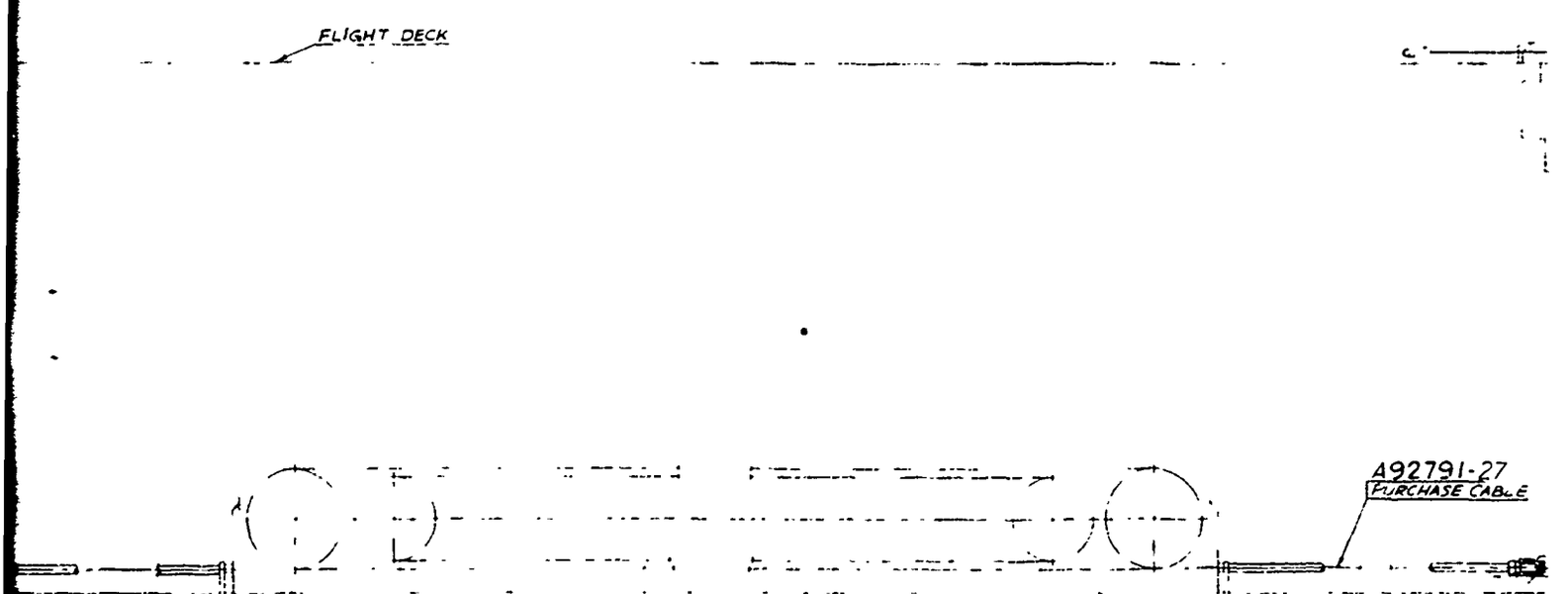
612460-1



509067-1 R/L
FAIRLEAD ASSY
SEE DETAIL E

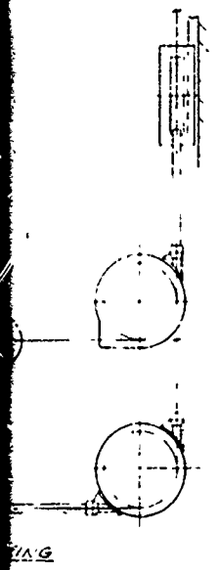


PLAN VIEW
BARRICADE POSITION TYPICAL



FRONT ELEVATION

A



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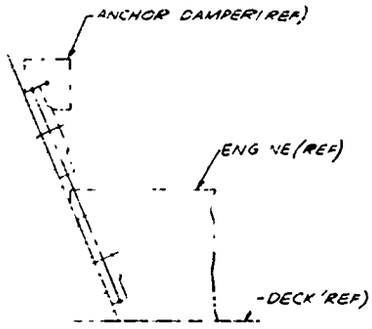
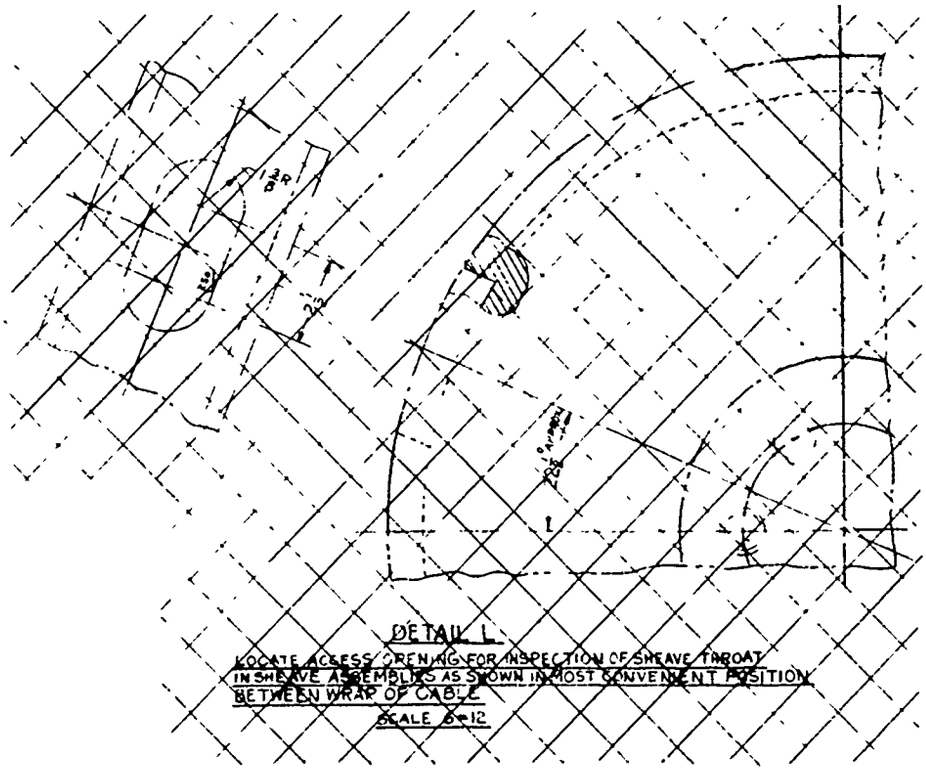


VIEW J-J



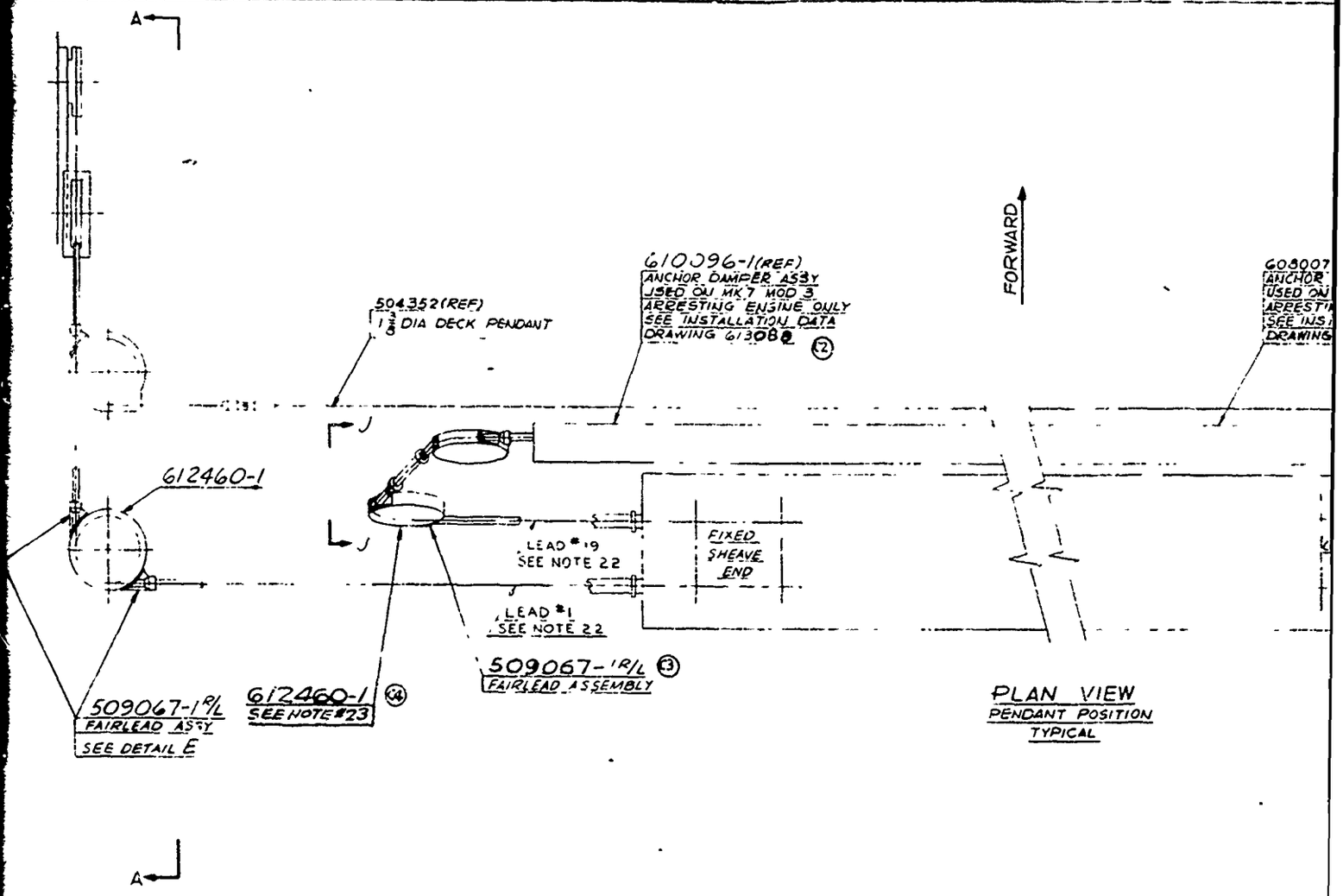
DETAIL L

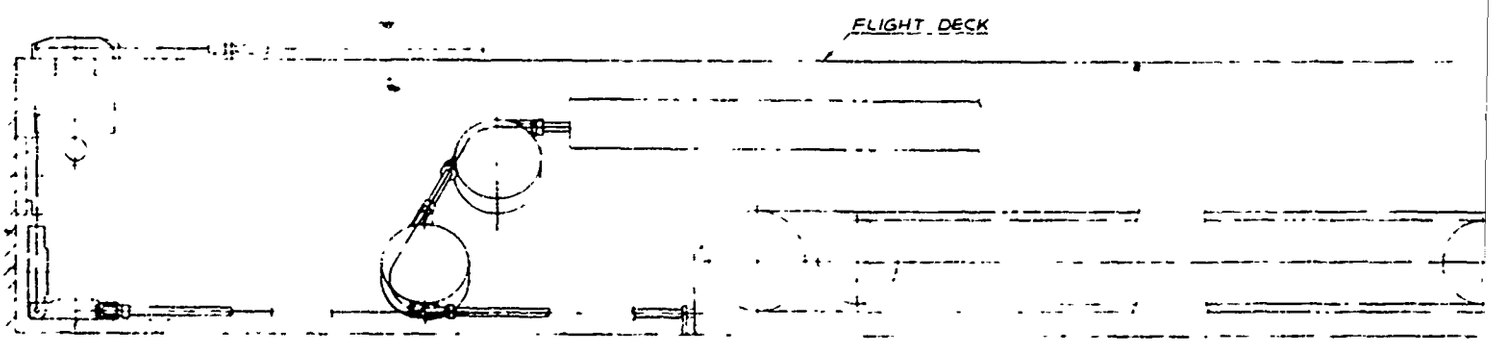
LOCATE ACCESS OPENING FOR INSPECTION OF SHEAVE THROAT IN SHEAVE ASSEMBLIES AS SHOWN IN MOST CONVENIENT POSITION BETWEEN WRAP OF CABLE

SCALE 6=12

(B)

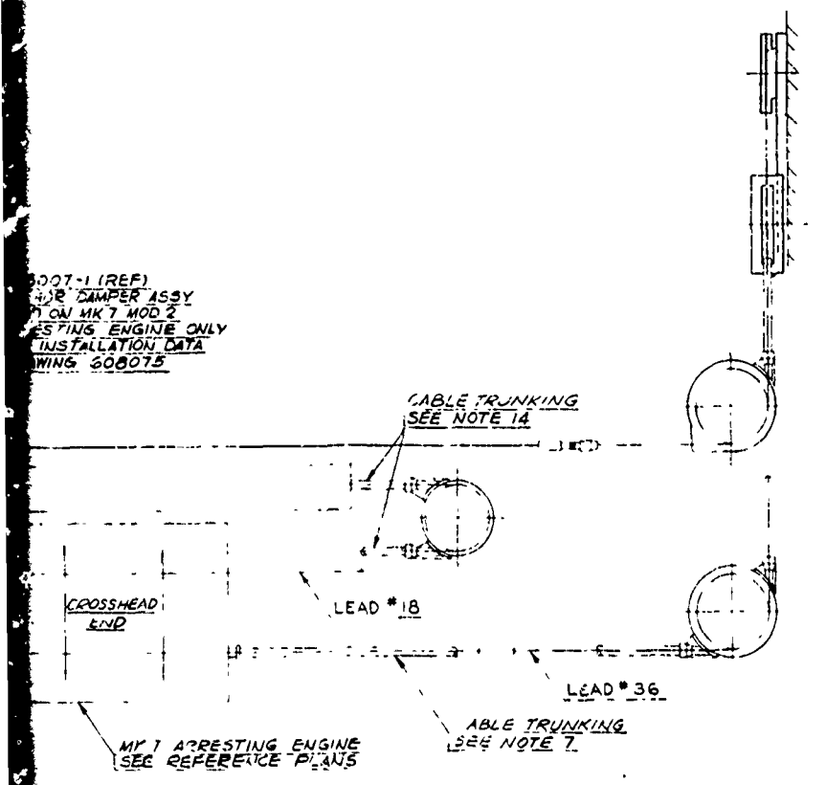
612792





FRONT ELEVATION

A



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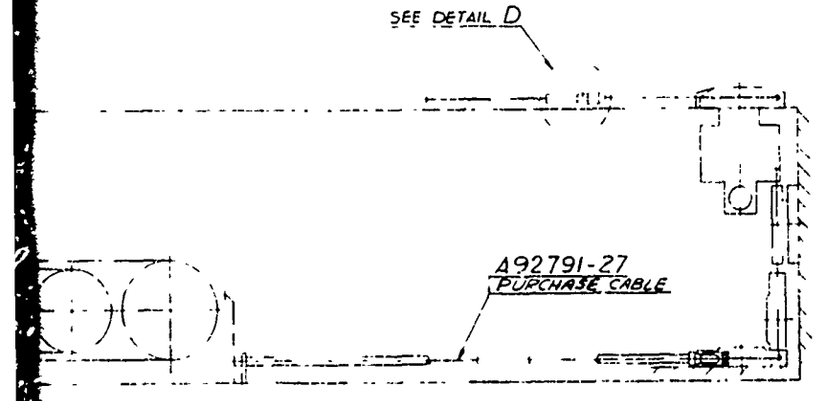
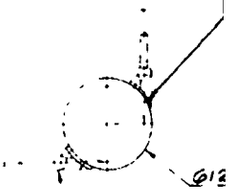


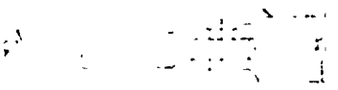


5090071 F/L (REF.
SEE NOTE 6)

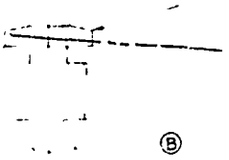
DETAIL E
TYPICAL FAIRLEAD INSTAL
(FOR BELOW DECK SHEAVES

5 7306 (REF)
DECK PENDANT ASSY 2" BARRICADE
EXTENSION PENDANT

407962-1
SOCKET - CLEVIS ASSY



DETAIL D
SOCKET AND TERMINAL ARRANGEMENT
SCALE 1/4



612490-1

99953
612991/M
CABLE GU
TYPICAL

VIE

612792

MS20074-06-11 BOLT
MS20995C47 WIRE LOCK (SEE NOTE 3)
3/8-16 UNC-3B, 3/4 DEEP
6 HOLES SEE NOTE (3)
TEMPLATE FROM 509067-1 R/L

612460-1 (REF)

STALLATION
VES ONLY)

ADE

317894-1
RING-LOCK

400791-1
TERMINAL-POURED TYPE

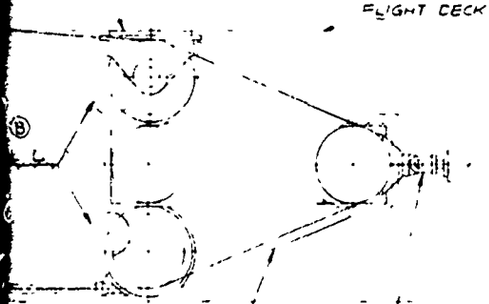
A92791-27
ROPE WIRE PURCHASE CABLE)

EMENT

TACK WELD APPROX FLUSH
3/4 LONG OPPOSITE TONGUES
OF LOCK RING ALONG JUNCTION
BETWEEN POURED TERMINAL
AND LOCK RING
USE MIL-E-18038, TYPE MIL-7015
OR MIL-7016 WELDING ROD
USE CAUTION TO PREVENT
EXCESSIVE HEAT TO SOCKET ASSY

612796 WRAPPING TYPE
RETRACTABLE SHEAVE INSTALLATION
SEE DETAIL H FOR TYPICAL
HORIZONTAL DECK SHEAVE INSTALLATION

FLIGHT DECK



9453 (MK 7 MOD 1 & 2) REF)
2991 (MK 7 MOD 3) REF)
LE GUARD ENCLOSURE
ICAL INSTALLATION

613008-1 (MK 7 MOD 1 & 2)
510203-1 (MK 7 MOD 3)
Y SHEAVE DAMPER
ARRANGEMENT SHOWN

VIEW A-A

NOTES

1. THIS DRAWING SHOWS A TYPICAL INSTALLATION OF THE PENDANT AND BARRICADE DRIVE SYSTEM FOR THE MARK 7 MOD 1, MARK 7 MOD 2 AND MARK 7 MOD 3 ARRESTING ENGINES. FOR DETAIL INFORMATION SEE REFERENCE DRAWINGS LISTED BELOW.
2. ARRANGEMENT, SELECTION, QUANTITY AND TYPE OF ALL ITEMS SHALL BE INSTALLED UNDER THE COGNIZANCE OF THE INSTALLING ACTIVITY TO SUIT LOCAL CONDITIONS SUBJECT TO APPROVAL OF NAEL (SI)
3. SAFETY WIRING TO BE IN ACCORDANCE WITH MS 33540
4. SHEAVE ASSEMBLIES INSTALLED IN LOCATIONS INACCESSIBLE FOR LUBRICATION SHALL BE EQUIPPED WITH V8 GREASE FITTINGS PIPED TO A READILY ACCESSIBLE LOCATION.
5. ARRANGE ALL DECK EDGE TYPE FAIRLEAD SHEAVE INSTALLATIONS SO THAT DRAIN HOLE IS LOCATED IN LOWEST POSITION, SO THAT DRAINING OF SHEAVE ASSEMBLY MAY BE PIPED OVERBOARD
6. ALL THRU DECK TYPE SHEAVE ASSEMBLIES NOT PART OF SHEAVE DAMPER INSTALLATION MUST BE PIPED TO DRAIN OVERBOARD SEE VIEW E-F.
7. CABLE TRUNKS OF 2 1/2 DIAMETER PIPE, WITH SUPPORTS WHERE REQUIRED, SHALL BE INSTALLED BETWEEN ALL FAIRLEAD SHEAVES MATERIAL SHALL BE FURNISHED BY INSTALLING ACTIVITY.
8. SHEAVE ASSEMBLIES SHALL BE MOUNTED WITH 1 INCH DIAMETER HIGH TENSILE STEEL BOLTS HAVING A MINIMUM STRENGTH OF 120,000 UTS AND A MAXIMUM STRENGTH OF 142,000 UTS, (HEAT TREATED TO ROCKWELL HARDNESS C24-C32) FASTENINGS TO BE FURNISHED BY INSTALLING ACTIVITY AND SHALL BE EQUIVALENT TO NAEL (SI) (SOCKET HEAD SCREWS) STANDARD DRAWING 1340, EXCEPT AS NOTED ABOVE.
9. THE DESIGN OF ALL STRUCTURES SUPPORTING THE PARTS SHOWN ON THIS INSTALLATION MUST BE BASED ON THE 175,000 POUNDS NOMINAL BREAKING STRENGTH OF 1 3/8 DIAMETER, 6 x 25 WIRE ROPE, SPEC MIL-W-83178, WRAPPED 180° AROUND SHEAVE.
10. MOUNT FAIRLEAD ASSEMBLIES TO SUIT DRIVE SYSTEM CABLE LEAD AND SHEAVE ARRANGEMENT WELD FAIRLEAD ASSEMBLIES TO DECK SHEAVES, THRU DECK SHEAVES AND FAIRLEAD SHEAVES IF MOUNTING BOLTS OF FAIRLEAD ASSEMBLIES ARE OBSTRUCTED BY THE SHEAVE HOUSING BOLTS.
11. ON DECK EDGE FAIRLEAD SHEAVE ASSEMBLIES G124GO-1 ONLY WELDED TYPE FAIRLEADS 414733-1 MAY BE INSTALLED AS AN ALTERNATE TO 509067-1 R/L, WELD LOWER HALF OF 414733-1 ONLY, TO BASE OF FAIRLEAD SHEAVE HOUSING WITH 3/16 FILLET WELD.
12. FOR REEVING AND TERMINAL POURING INSTRUCTIONS OF PURCHASE CABLE, SEE NAVWEPS 51-5BAA-1 (MK 7 MOD 1 AG), NAVWEPS 51-5BBA-1 (MK 7 MOD 2 AG) OR NAVWEPS 51-5BCA-1 (MK 7 MOD 3 A.G).
13. ALL FAYING SURFACES SHALL HAVE AN APPLICATION OF ONE (1) COAT OF ZINC CHROMATE PRIMER (WET) IN ACCORDANCE WITH MPR 1201-2
14. TO FACILITATE ARRESTING ENGINE MAINTENANCE, CABLE TRUNKING INSTALLED BETWEEN ANCHOR DAMPER AND ARRESTING ENGINE MUST BE SPLIT. ANY BULKHEAD THAT SPLIT TRUNKING PASSES THROUGH MUST HAVE AN ACCESS HOLE LARGE ENOUGH TO PERMIT PASSAGE OF PURCHASE CABLE SOCKET AND POURED TERMINAL.
15. LINERS INSTALLED FOR ALIGNMENT OF SHEAVE ASSEMBLIES MUST NOT EXCEED A MINIMUM THICKNESS OF 1/8 INCH OR A MAXIMUM THICKNESS OF 3/4 INCH. THESE DIMENSIONS ALSO APPLY TO TAPERED LINERS.
16. FOUNDATION SURFACE AND LINER SURFACES FOR INSTALLATION OF SHEAVE ASSEMBLY MUST BE FLAT WITHIN .005 INCH TOTAL 75 % OF OUTER PERIPHERY AND 75 % OF INNER PERIPHERY MUST BE IN CONTACT WITH FOUNDATION WITH A MAXIMUM OPENING OF .010 PERMITTED ON THE REMAINING 25 %
17. ALL FASTENINGS FOR ANCHORAGE OF SHEAVE ASSEMBLIES MUST BE THRU BOLTS AS SHOWN IN DETAIL K, EXCEPT ANCHORAGE OF FLUSH TYPE THRU DECK SHEAVE ASSEMBLIES, WHICH MUST BE INSTALLED IN ACCORDANCE WITH NAEL (SI) DRAWING 612796 ALSO, BLIND BOLT HOLES ARE NOT PERMISSIBLE ANY DEVIATION FROM THESE REQUIREMENTS MUST BE APPROVED BY THE NAVAL AIR ENGINEERING LABORATORY (SI).
18. I DIA BOLTS SECURING SHEAVE ASSEMBLIES MUST BE TORQUED 350 TO 400 FT-LBS
19. THREAD DIMENSIONS AND DESIGNATIONS SHALL BE INTERPRETED IN ACCORDANCE WITH HANDBOOK H28 AND MIL-STD-9, RESPECTIVELY.
20. BOLTING REQUIREMENTS ARE TO BE IN ACCORDANCE WITH BUSHIPS INSTRUCTION 9110.54
21. THE SHEAVE ARRANGEMENTS FOR THE BARRICADE AND PENDANT POSITIONS SHOW THE MINIMUM NUMBER OF SHEAVES POSSIBLE AND IS THE OPTIMUM SHEAVE ARRANGEMENT FOR THE RESPECTIVE DRIVE SYSTEMS.
22. CABLE LEADS #1 AND #19 ONLY, MUST HAVE ELONGATED TRUNKING AT ENGINE TO PERMIT LATERAL TRAVEL OF PURCHASE CABLE AS CROSSHEAD MOVES FROM BATTERY POSITION TO FULL IN POSITION.
23. (C1) ALL SHIPS INSTALLING 28 INCH PITCH DIAMETER SHEAVES IN ACCORDANCE WITH MARK 7 ARRESTING GEAR SERVICE CHANGE NO. 230 SHALL NOT REPLACE EXISTING 24 INCH PITCH DIAMETER SHEAVES BETWEEN ARRESTING ENGINE AND ANCHOR DAMPER ASSEMBLIES.

REF

CLASSIFICATION OF CHARACTERISTICS
CRITICAL C .0 6
MAJOR M TO 25
MINOR - ALL OTHER CHARACTERISTICS

UNLESS OTHERWISE S
DIMENSIONS ARE IN INCH
TOLERANCES ON
FRACTIONS DECIMALS
± ± .010

THIS DOCUMENTS A N
PART OF THIS DRAWING
MPR 1201

7

REVISIONS				
SYM	ZONE	DESCRIPTION	DATE	APPROVED
A		SEE REVISION NOTICE CLASS 'R' CHANGE BARBELLA		
B		NRN CL 'R' CHG. ON DWG' DELETED DETAIL 'L'. REASON - TO INSURE DISASSEMBLY FOR PROPER INSPECTION OF COMPLETE SHEAVE ASSY. IN VIEW F-F ADDED 'OR BE LESS THAN' 30 INCHES' TO DIMENSION NOTE BETWEEN FAIR-LEAD DECK SHEAVE CENTERS REASON: TO INSURE AT LEAST 3 LAYS OF CABLE BETWEEN SHEAVE CENTERS.		
C		CL 'R' CHG. (1) ADDED (2)(3)(4) REVISED. SEE REV. NOTICE.		

...ING SHOWS A TYPICAL INSTALLATION OF THE PENDANT AND BARRICADE ...STEM FOR THE MARK 7 MOD 1, MARK 7 MOD 2 AND MARK 7 MOD 3 ... ENGINES. FOR DETAIL INFORMATION SEE REFERENCE DRAWINGS ...ELOW.
...ENT, SELECTION, QUANTITY AND TYPE OF ALL ITEMS SHALL BE ... UNDER THE COGNIZANCE OF THE INSTALLING ACTIVITY TO SUIT ...DITIONS SUBJECT TO APPROVAL OF NAEL (SI)
...IRING TO BE IN ACCORDANCE WITH MS 33540.
...SEMBLIES INSTALLED IN LOCATIONS INACCESSIBLE FOR ...ION SHALL BE EQUIPPED WITH 1/8 GREASE FITTINGS PIPED ...DILY ACCESSIBLE LOCATION.
...ALL DECK EDGE TYPE FAIRLEAD SHEAVE INSTALLATIONS SO THAT DRAIN ...OCATED IN LOWEST POSITION, SO THAT DRAINING OF SHEAVE ... MAY BE PIPED OVERBOARD
... DECK TYPE SHEAVE ASSEMBLIES NOT PART OF SHEAVE DAMPER ...TION MUST BE PIPED TO DRAIN OVERBOARD SEE VIEW F-F.
...UNKS OF 2 1/2 DIAMETER PIPE, WITH SUPPORTS WHERE REQUIRED, ...INSTALLED BETWEEN ALL FAIRLEAD SHEAVES. MATERIAL SHALL BE ...D BY INSTALLING ACTIVITY
...SSEMBLIES SHALL BE MOUNTED WITH 1 INCH DIAMETER HIGH ... STEEL BOLTS HAVING A MINIMUM STRENGTH OF 120,000 UTS ...XIMUM STRENGTH OF 142,000 UTS, (HEAT TREATED TO ROCKWELL ... C24-C32) FASTENINGS TO BE FURNISHED BY INSTALLING ... AND SHALL BE EQUIVALENT TO NAEL (SI) (SOCKET HEAD SCREWS) ...D DRAWING 1340, EXCEPT AS NOTED ABOVE
...N OF ALL STRUCTURES SUPPORTING THE PARTS SHOWN ON THIS ...ION MUST BE BASED ON THE 175,000 POUNDS NOMINAL ...S STRENGTH OF 1 3/8 DIAMETER, 6x25 WIRE ROPE, SPEC ...8, WRAPPED 180° AROUND SHEAVE
...LEAD ASSEMBLIES TO SUIT DRIVE SYSTEM CABLE LEAD AND SHEAVE ...ENT. WELD FAIRLEAD ASSEMBLIES TO DECK SHEAVES, THRU DECK ... AND FAIRLEAD SHEAVES IF MOUNTING BOLTS OF FAIRLEAD ...ES ARE OBSTRUCTED BY THE SHEAVE HOUSING BOLTS
...DGE FAIRLEAD SHEAVE ASSEMBLIES 612460-1 ONLY, WELDED TYPE FAIRLEADS ...MAY BE INSTALLED AS AN ALTERNATE TO 509067-1 R/L. WELD LOWER HALF ...-1 ONLY, TO BASE OF FAIRLEAD SHEAVE HOUSING WITH 3/16 FILLET WELD.
...ING AND TERMINAL POURING INSTRUCTIONS OF PURCHASE CABLE, ...WEPS 51-5BAA-1 (MK 7 MOD 1 AG), NAVWEPS 51-5BBA-1 (MK 7 MOD 2 A G) ...PS 51-5BCA-1 (MK 7 MOD 3 A.G).
...S SURFACES SHALL HAVE AN APPLICATION OF ONE (1) COAT OF ZINC ... PRIMER (WET) IN ACCORDANCE WITH MPR 1201-2
...TE ARRESTING ENGINE MAINTENANCE, CABLE TRUNKING INSTALLED ... ANCHOR DAMPER AND ARRESTING ENGINE MUST BE SPLIT ANY ...D THAT SPLIT TRUNKING PASSES THROUGH MUST HAVE AN- ...OLE LARGE ENOUGH TO PERMIT PASSAGE OF PURCHASE CABLE ...AND POURED TERMINAL
...STALLED FOR ALIGNMENT OF SHEAVE ASSEMBLIES MUST NOT ... MINIMUM THICKNESS OF 1/8 INCH OR A MAXIMUM THICKNESS OF 3/4 ...SE DIMENSIONS ALSO APPLY TO TAPERED LINERS.
...N SURFACE AND LINER SURFACES FOR INSTALLATION OF SHEAVE ... MUST BE FLAT WITHIN 005 INCH TOTAL 75 % OF OUTER ...Y AND 75 % OF INNER PERIPHERY MUST BE IN CONTACT WITH ...N WITH A MAXIMUM OPENING OF 010 PERMITTED ON THE ...G 25 %
...NINGS FOR ANCHORAGE OF SHEAVE ASSEMBLIES MUST BE ...TS AS SHOWN IN DETAIL K, EXCEPT ANCHORAGE OF FLUSH TYPE ...K SHEAVE ASSEMBLIES, WHICH MUST BE INSTALLED IN ...NCE WITH NAEL (SI) DRAWING 612796 ALSO, BLIND BOLT ...RE NOT PERMISSIBLE ANY DEVIATION FROM THESE REQUIREMENTS ... APPROVED BY THE NAVAL AIR ENGINEERING LABORATORY (SI).
...SECURING SHEAVE ASSEMBLIES MUST BE TORQUED 350 TO 400 FT-LBS
...DIMENSIONS AND DESIGNATIONS SHALL BE INTERPRETED IN ...NCE WITH HANDBOOK H28 AND MIL-STD-9, RESPECTIVELY ...EQUIREMENTS ARE TO BE IN ACCORDANCE WITH BUSHIPS ...TION 9110 54
...VE ARRANGEMENTS FOR THE BARRICADE AND PENDANT ...NS SHOW THE MINIMUM NUMBER OF SHEAVES POSSIBLE ...HE OPTIMUM SHEAVE ARRANGEMENT FOR THE ...VE DRIVE SYSTEMS
...EADS #1 AND #19 ONLY, MUST HAVE ELONGATED TRUNKING ...NE TO PERMIT LATERAL TRAVEL OF PURCHASE CABLE AS ...EAD MOVES FROM BATTERY POSITION TO FULL IN POSITION.
...IPS INSTALLING 28 INCH PITCH DIAMETER SHEAVES IN ...ANCE WITH MARK 7 ARRESTING GEAR SERVICE CHANGE ...SHALL NOT REPLACE EXISTING 24 INCH PITCH ...TER SHEAVES BETWEEN ARRESTING ENGINE ...NCHOR DAMPER ASSEMBLIES.

REFERENCE PLANS:

		NAE (SI) DRAWING NUMBER
1	ARRESTING ENGINE-INSTALLATION DATA-MK7 MOD 1	02-61299
2	ARRESTING ENGINE-INSTALLATION DATA-MK7 MOD 2	02-61276
3	ARRESTING ENGINE-INSTALLATION DATA-MK7 MOD 3	02-61946
4	ARRESTING ENGINE-ASSEMBLY-MK7 MOD 1 (WITHOUT COOLER)	51-61204
5	ARRESTING ENGINE-ASSEMBLY-MK7 MOD 1 (WITH COOLER)	51-61509
6	ARRESTING ENGINE-ASSEMBLY-MK7 MOD 2 (WITHOUT COOLER)	51-61629
7	ARRESTING ENGINE-ASSEMBLY-MK7 MOD 2 (WITH COOLER)	51-61224
8	ARRESTING ENGINE-ASSEMBLY-MK7 MOD 3 (WITHOUT COOLER)	50-61938
9	ARRESTING ENGINE-ASSEMBLY MK7 MOD 3 (WITH COOLER)	50-61937
10	RETRACTABLE SHEAVE INSTALLATION-WRAPPING AND UNWRAPPING	612796
11	HORIZONTAL DECK SHEAVE-ASSEMBLY	612578
12	THRU DECK FAIRLEAD SHEAVE-ASSEMBLY	613522
13	THRU DECK FAIRLEAD SHEAVE-ASSEMBLY (WOOD DECK)	612455
14	THRU DECK FAIRLEAD SHEAVE ASSEMBLY (STEEL DECK)	612467
15	DECK EDGE FAIRLEAD SHEAVE-ASSEMBLY	612460
16	SHEAVE DAMPER-TYPICAL INSTALLATION-MK7 MOD 1 AND MK7 MOD 2	613008
17	SHEAVE DAMPER-TYPICAL INSTALLATION-MK7 MOD 3	610203
18	SHEAVE DAMPER CABLE GUARD ENCLOSURE-TYPICAL INSTL MK7 MOD 1 & 2	609953
19	SHEAVE DAMPER CABLE GUARD ENCLOSURE-TYPICAL INSTL MK7 MOD 3	612991
20	ANCHOR DAMPER-INSTALLATION DATA-MK7 MOD 2	608075
21	ANCHOR DAMPER-ASSEMBLY-MK7 MOD 2	608007
22	ANCHOR DAMPER-INSTALLATION DATA-MK7 MOD 3	613038
23	ANCHOR DAMPER ASSEMBLY-MK7 MOD 3	610096
24	FAIRLEAD ASSEMBLY-WELDED TYPE	414733
25	FAIRLEAD ASSEMBLY-CAST TYPE	509067
26	FAIRLEAD ASSEMBLY-CAST TYPE	509071
27	CLEVIS SOCKET ASSEMBLY	407962
28	POURED TYPE TERMINAL	400791
29	LOCK RING	317894
30	WIRE ROPE (PURCHASE CABLE)	A9275-27
31	DECK PENDANT/BARRICADE EXTENSION PENDANT	507306
32	THRU DECK FAIRLEAD SHEAVE-ASSEMBLY (FOR CVA-31 AND CVA 38 ONLY)	612561

NEXT ASSEMBLY	QTY REQ'D	PART NUMBER	DESCRIPTION	STOCK	MATERIAL	SPECIFICATION	UNIT WT	ZONE

LIST OF MATERIALS

CLASSIFICATION OF CHARACTERISTICS
CRITICAL C TO C
MAJOR M TO M
MINOR - ALL OTHER CHARACTERISTICS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ± .010 ANGLES ± 1/2°

MPR 1201

MECHANICAL FINISH SURFACE ROUGHNESS IN MICROINCHES. √ THIS SYMBOL EMBRACING THE SURFACE ROUGHNESS (IN MICROINCHES) REPRESENTS THE MAXIMUM ACCEPTABLE ROUGHNESS, AND MAY BE PRODUCED BY ANY MECHANICAL PROCESS. REF SPEC. MIL STD-10

DESIGNED FOR MK7 MOD 1, MK7 MOD 2 & MK7 MOD 3

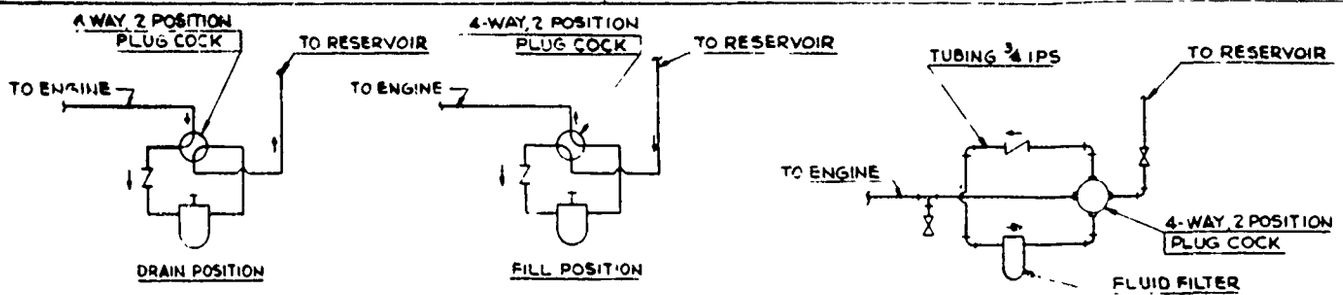
DRAWN | CHECKED | MATERIAL | ANALYZED | SUPERVISOR | APPROVED | APPROVED

NAVAL AIR ENGINEERING LABORATORY (SI) NAVAL AIR ENGINEERING CENTER PHILA., PA. 19112

TITLE: DRIVE SYSTEM ARRESTING GEAR TYPICAL INSTALLATION 1 3/8 DIA CABLE 28 PD SHEAVES

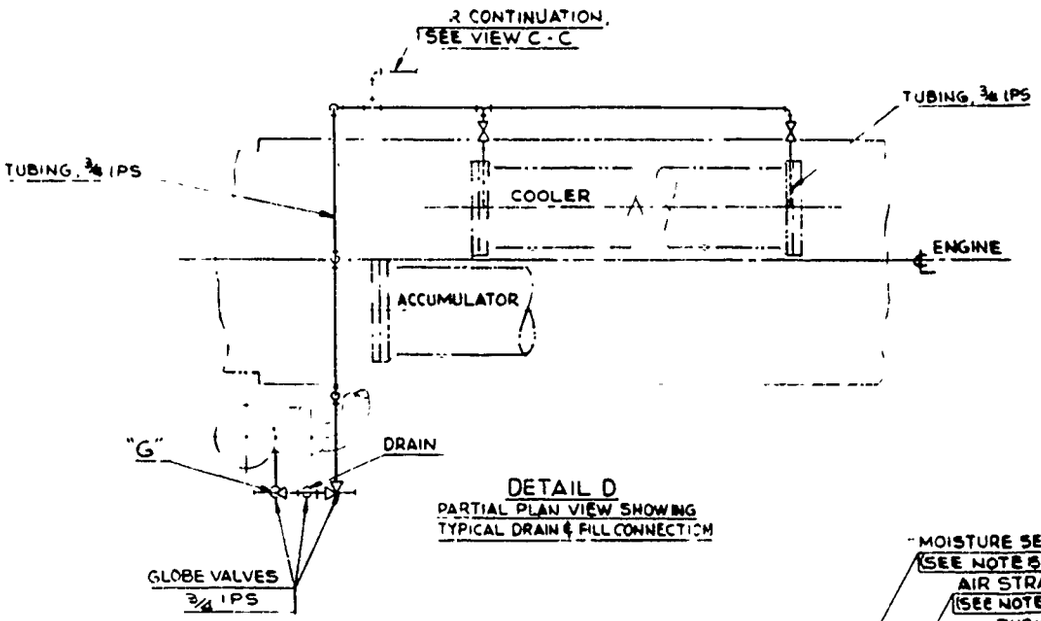
CODE IDENT NO 10020 | SIZE H | DRAWING NO. 612792

SCALE 1/2 = 1'0" & AS NOTED | SHEET

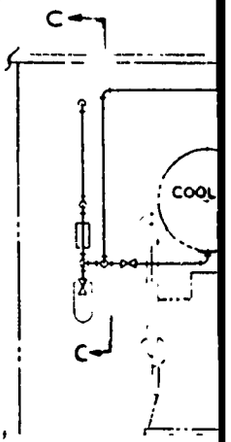


SCHEMATIC DIAGRAM
4 WAY, 2 POSITION PLUG COCK

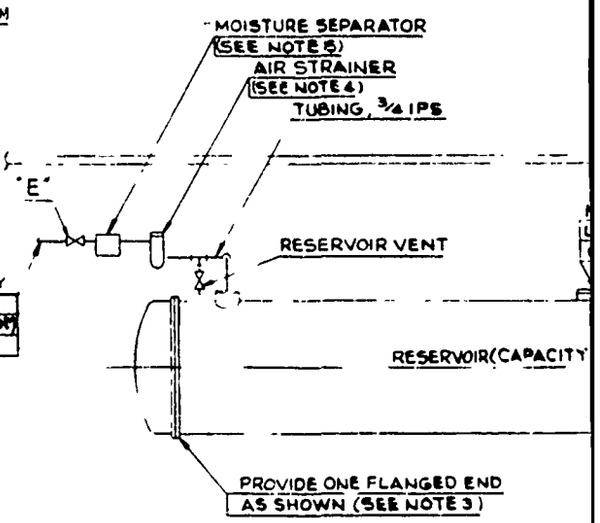
VIEW C-C



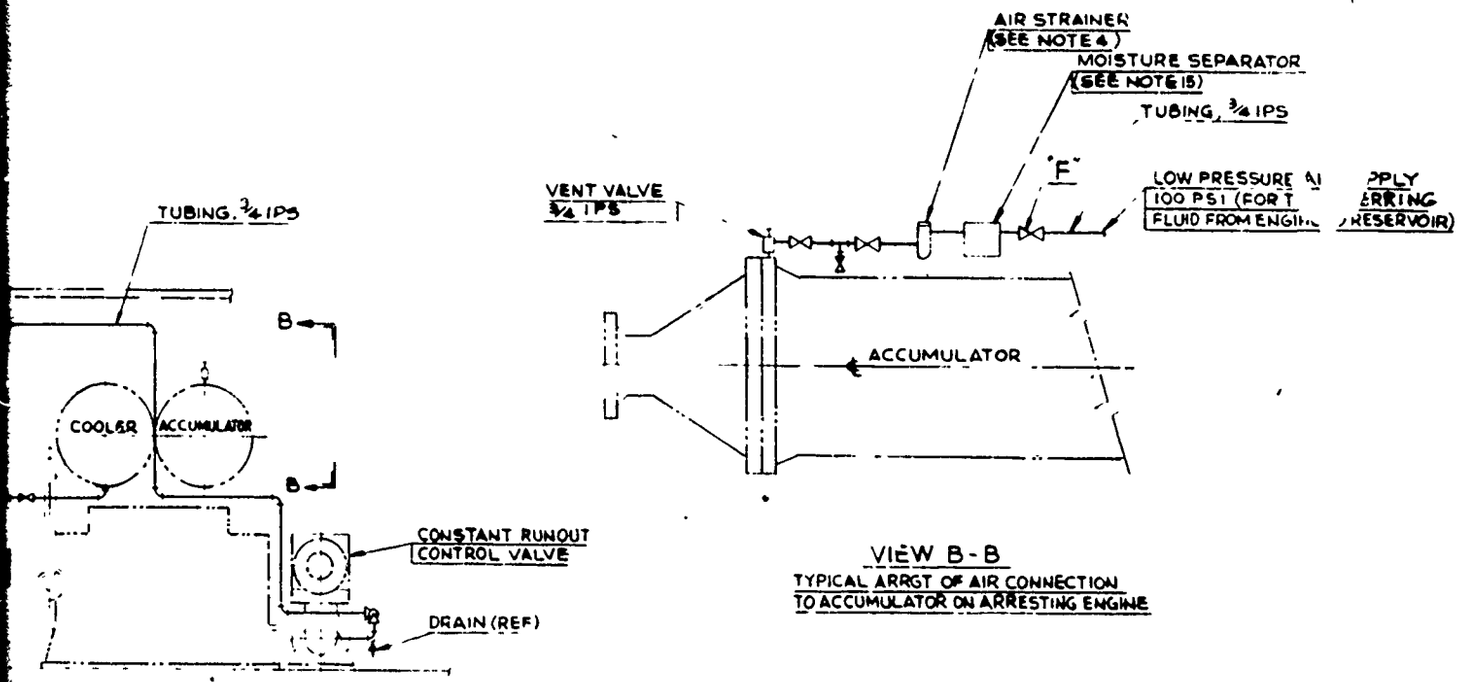
DETAIL D
PARTIAL PLAN VIEW SHOWING TYPICAL DRAIN & FILL CONNECTION



TYPICAL EN
SHOWING
TO CONSTA

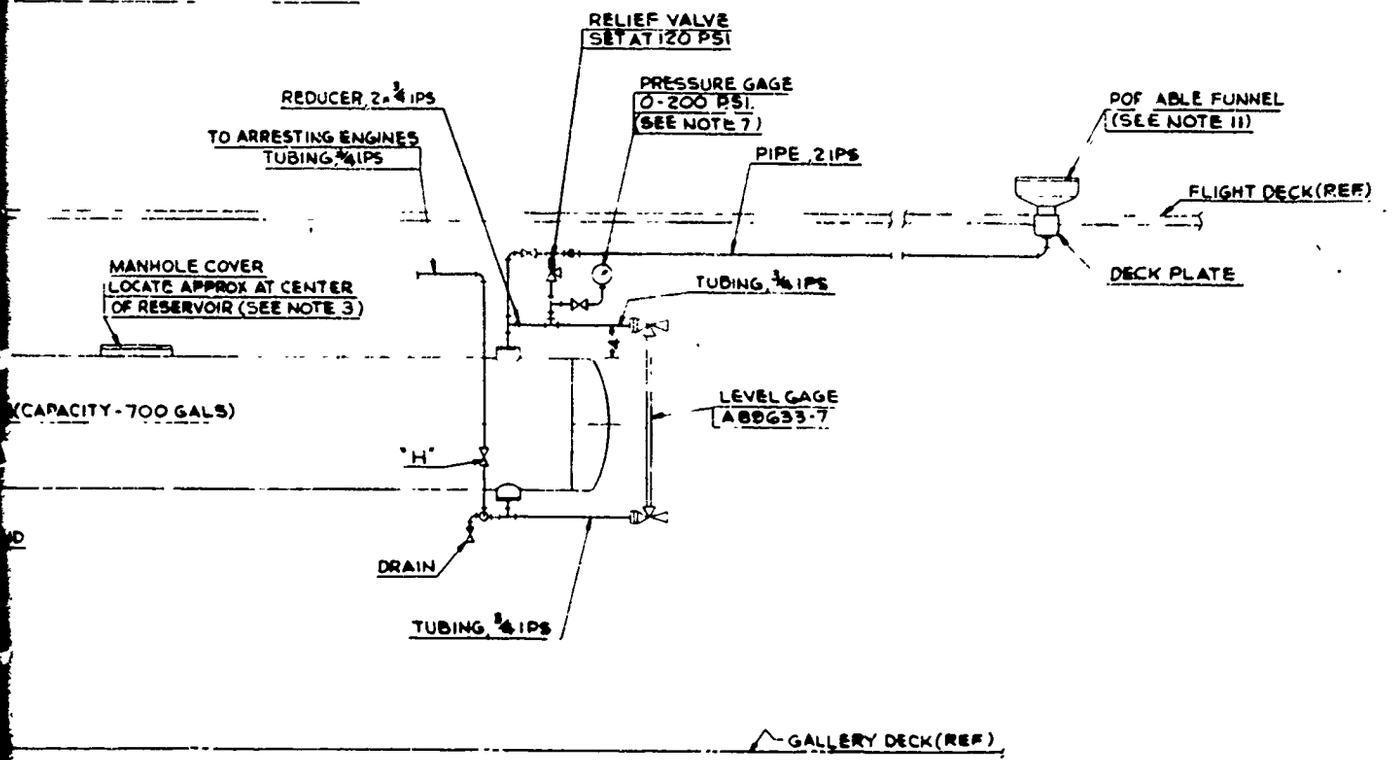


VIE



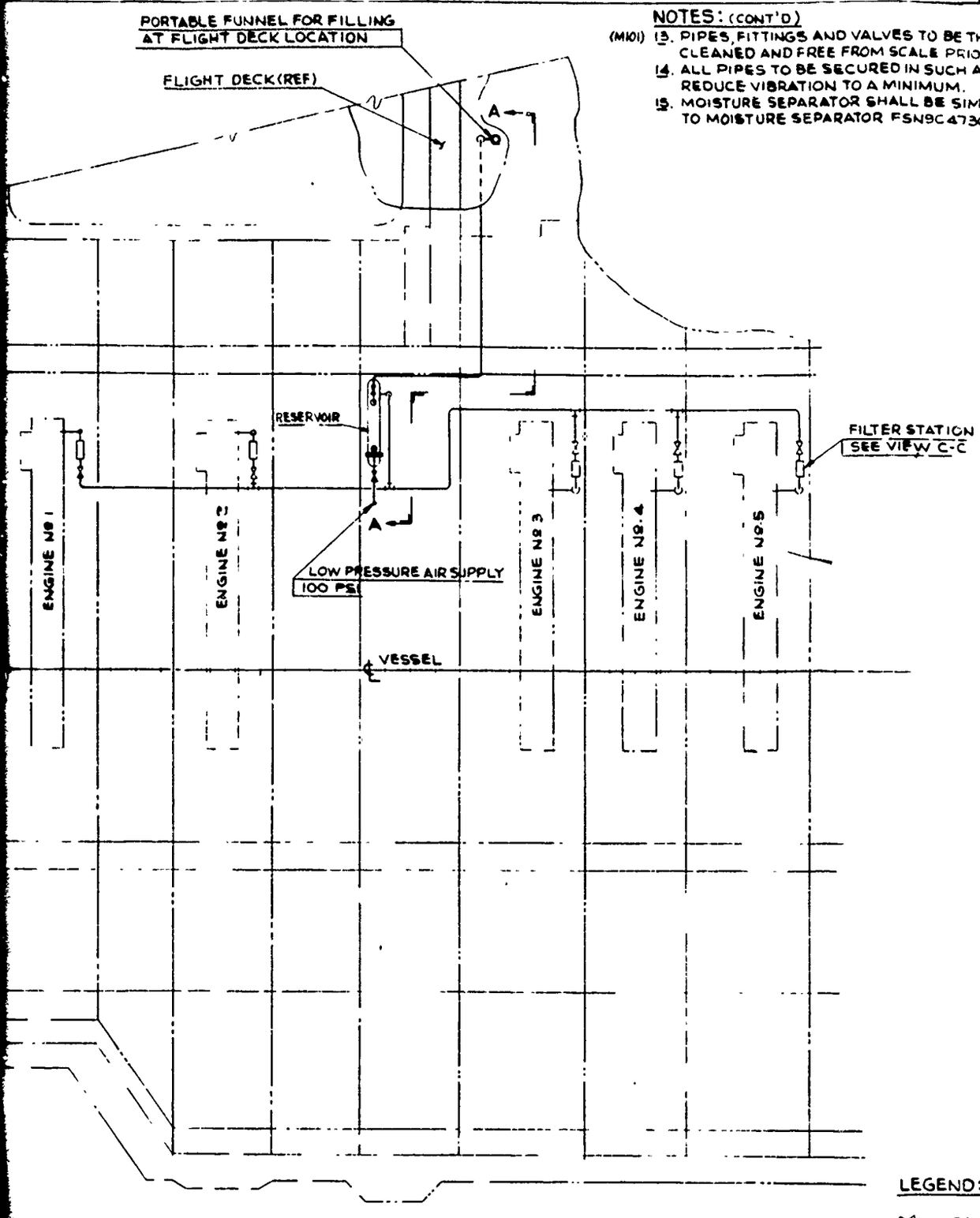
VIEW B-B
TYPICAL ARRGT OF AIR CONNECTION
TO ACCUMULATOR ON ARRESTING ENGINE

YPICAL END VIEW OF AG ENGINES
SHOWING DRAIN & FILL CONNECTION
TO CONSTANT RUNOUT CONTROL VALVE



VIEW A - A

2



PLAN VIEW - GALLERY DECK
SHOWING ARRESTING ENGINE INSTALLATION DRAIN AND FILL ARRANGEMENT
(SEE NOTE 6)

NOTES: (CONT'D)

(M101) 13. PIPES, FITTINGS AND VALVES TO BE THOROUGHLY CLEANED AND FREE FROM SCALE PRIOR TO INSTALLATION.
14. ALL PIPES TO BE SECURED IN SUCH A MANNER AS TO REDUCE VIBRATION TO A MINIMUM.
15. MOISTURE SEPARATOR SHALL BE SIMILAR OR EQUIVALENT TO MOISTURE SEPARATOR FSN9C 4730-277-8901

NOTES:

1. THIS DRA
PROVIDE
THE TRA
ENGINE
A TO DR
RESE
THE
(1) CHE
(2) WIT
ACC
VAL
(3) OPE
(4) OPE
PLU
(5) OPE
(6) AFT
FRO
B TO FILL
FOLLOW
(1) CLOS
(2) CHA
RET
(3) OPEN
OPE
(4) OPEN
AND
(5) VENT
APP
(6) CLO
VEN
(7) REM
TO
2. A SCHEMA
SHALL BE
3. THE MANN
INTERIOR
ACCESS
4. AIR STRA
SHOWN O
CONTROL
FILTER EL
SIZE PAR
(M102) 5. ALL LOW
SHALL W
6. THE FLU
AS CLOSE
7. THE INSTA
GAUGE W
LOCATIO
OPERATI
OPERATI
(M103) 8. AIR LINES
DIRECTION
VALVE ON
BLACK IN
(M104) 9. CONSTRUC
A CORROSI
WELD W
B CORROSI
OR FS34
MIL-E
(OUTSI
10. EXCEPT FO
AND FITTI
11. PROVIDE A
OPENING
THE ARRE
12. THE INSTA
SHALL FU
THIS DRAW
STRAPS

LEGEND:

- GLOBE VALVE
- CHECK VALVE
- RELIEF VALVE
- 4 WAY, 2 POSITION PLUG COCK
- FILTER

CLASSIFICATION
CRITICAL — C TO
MAJOR — M10
MINOR — ALL OT

THOROUGHLY
RIOR TO INSTALLATION.
H A MANNER AS TO
.
SIMILAR OR EQUIVALENT
730-277-8901

ON
C

ND:
GLOBE VALVE
CHECK VALVE
RELIEF VALVE
4 WAY, 2 POSITION PLUG COCK
FILTER

NOTES:

1. THIS DRAWING SHOWS A TYPICAL PIPING ARRANGEMENT WHICH PROVIDES A FLUID FILL SYSTEM FROM THE FLIGHT DECK AND THE TRANSFER DRAIN AND FILL SYSTEM FOR ARRESTING ENGINE FLUID
   A. TO DRAIN OR TRANSFER THE FLUID FROM THE ENGINE TO THE RESERVOIR AS SHOWN FOR A TYPICAL OPERATION, THE FOLLOWING STEPS ARE TO BE TAKEN:
      (1) CHECK FLUID LEVEL IN RESERVOIR
      (2) WITH ENGINE FULLY RETRACTED, BLOW DOWN ENGINE ACCUMULATOR PRESSURE TO 150 PSI AND BLOCK RETRACTING VALVE IN OPEN POSITION.
      (3) OPEN RESERVOIR VENT AND ASSURE THAT VALVE "E" IS CLOSED
      (4) OPEN VALVES "F" AND "G" THEN, OPEN 4-WAY, 2 POSITION PLUG COCK TO DRAINING POSITION
      (5) OPEN VALVE "H" FLUID WILL NOW FLOW THRU FILTER TO RESERVOIR
      (6) AFTER DESIRED LEVEL OF FLUID IS DRAINED INTO RESERVOIR FROM ENGINE, CLOSE VALVES "G" AND "H"
   B. TO FILL OR RETURN FLUID TO THE ARRESTING ENGINE, THE FOLLOWING STEPS ARE TO BE TAKEN:
      (1) CLOSE RESERVOIR VENT AND ASSURE THAT VALVE "F" IS CLOSED
      (2) CHARGE ENGINE ACCUMULATOR TO 150 PSI AND BLOCK OPEN RETRACTING VALVE. OPEN VALVE "H"
      (3) OPEN 4 WAY 2 POSITION PLUG COCK TO FILLING POSITION OPEN VALVE "G" AT THE ENGINE
      (4) OPEN LOW PRESSURE AIR SUPPLY VALVE "E" AT RESERVOIR AND FILL ENGINE TO DESIRED LEVEL
      (5) VENT AIR FROM SYSTEM CLOSE VENT VALVES WHEN FLUID APPEARS AT VENTS
      (6) CLOSE TRANSFER VALVE "G" WHEN SYSTEM IS COMPLETELY VENTED OF AIR
      (7) REMOVE BLOCK FROM RETRACTING VALVE ALLOWING VALVE TO CLOSE
2. A SCHEMATIC DIAGRAM WITH GENERAL OPERATING INSTRUCTIONS SHALL BE PROVIDED IN EACH ARRESTING ENGINE COMPARTMENT
3. THE MANHOLE COVER IS PROVIDED TO ENABLE INSPECTION OF INTERIOR OF RESERVOIR FLANGED END OF TANK IS PROVIDED FOR ACCESS AND TO FACILITATE CLEANING
4. AIR STRAINER SHALL BE SIMILAR OR EQUIVALENT TO STRAINER SHOWN ON NAVSHIPS DWG NO. 5132 S4823-2706, SHIPS PARTS CONTROL CENTER PART NO H4730-369-5053 EXCEPT THAT THE FILTER ELEMENT SHALL BE CAPABLE OF REMOVING MINIMUM SIZE PARTICLES OF 125 MICRONS
5. (M102) ALL LOW PRESSURE HARDWARE PIPING, VALVES RESERVOIR ETC SHALL WITHSTAND A MAXIMUM HYDROSTATIC TEST OF 200 PSI
6. THE FLUID STOWAGE SYSTEM SHOULD BE CENTRALLY LOCATED AS CLOSE AS POSSIBLE TO ARRESTING ENGINE COMPARTMENTS
7. THE INSTALLING ACTIVITY SHALL PROVIDE AN AIR PRESSURE GAUGE WITH A RANGE OF 0 TO 200 PSI AT AN APPROPRIATE LOCATION, CLOSE TO THE STOWAGE TANK WHERE OPERATING PERSONNEL CAN ASCERTAIN PROPER OPERATING PRESSURE.
8. (M103) AIR LINES SHALL BE MARKED "ALP" (AIR LOW PRESSURE) AND WITH DIRECTIONAL FLOW ARROWS IDENTIFICATION TO BE PLACED NEAR VALVE ON PRESSURE SIDE WHERE POSSIBLE. PAINT SHALL BE BLACK IN ACCORDANCE WITH MIL-P-15149
9. (M104) CONSTRUCTION AND MATERIAL OF TANK TO BE AS FOLLOWS
   A. CORROSION RESISTING STEEL PLATE PER QQ-S-766, CLASS 347 WELD WITH ELECTRODE MIL-E-22200/2A, TYPE MIL-347-15 OR -16
   B. CORROSION RESISTING CLAD STEEL PLATE PER QQ-S-682, CLASS FS32 OR FS347 CLAD ON INSIDE ONLY WELD CLAD SIDE WITH ELECTRODE MIL-E-22200/2A, TYPE MIL-347-15 OR -16 WELD UNCLAD SIDE (OUTSIDE) WITH ELECTRODE MIL-E-22200/1, TYPE MIL-7018
10. EXCEPT FOR HIGH PRESSURE ITEMS CALLED OUT, ALL AIR SUPPLY PIPING AND FITTINGS TO BE CORROSION RESISTANT (COPPER, STN STEEL OR BRASS)
11. PROVIDE A WATERTIGHT COVER ON THE FLIGHT DECK FOR THE FUNNEL OPENING WHEN NOT IN USE, THE PORTABLE FUNNEL CAN BE STORED IN THE ARRESTING GEAR STORE ROOM
12. THE INSTALLING ACTIVITY, UNDER THE COGNIZANCE OF NAVSHIPS, SHALL FURNISH ALL EQUIPMENT OR MATERIAL FOR THIS INSTALLATION THIS DRAWING DOES NOT DESIGNATE ALL POSSIBLE PIPE, ELBOWS, STRAPS OR HANGERS THAT MAY BE REQUIRED

REVISIONS: ZONE | SYM | DESCRIPTION | DATE | APPROVED

CLASSIFICATION OF CHARACTERISTICS	
CRITICAL	— C TO C
MAJOR	M101 TO M104
MINOR	— ALL OTHER CHARACTERISTICS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± — ±.010 ±1/2°

THESE DOCUMENTS ALSO ARE A PART OF THIS DRAWING

ENGINEERING DEPARTMENT (SI) NAVAL AIR ENGINEERING CENTER PHILA PA 19112

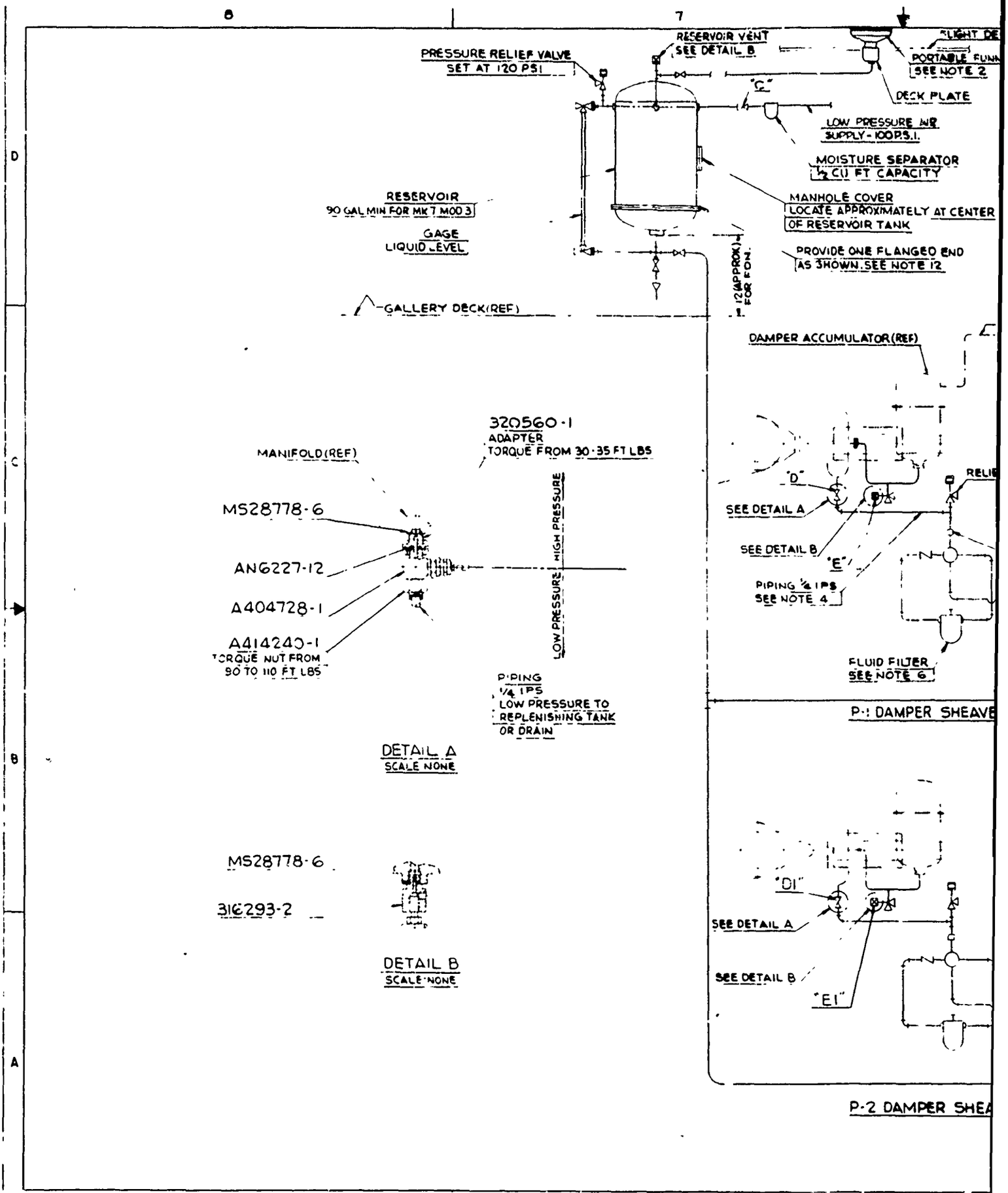
TITLE: DRAIN & FILL ARRANGEMENT MK 7 MOD 3 ARRESTING ENGINE

DESIGNED FOR: MK 7 MOD 3

SIZE: H | CODE IDENT NO 80020 | DRAWING NO 616111

SCALE: NONE

616111


8
7
D
C
B
A
PRESSURE RELIEF VALVE
SET AT 120 PSI
RESERVOIR VENT
SEE DETAIL B
PORTABLE FUNN
SEE NOTE 2
"C"
DECK PLATE
LOW PRESSURE WR
SUPPLY - 100 P.S.I.
MOISTURE SEPARATOR
½ CU FT CAPACITY
RESERVOIR
90 GAL MIN FOR MK 7 MOD 3
GAGE
LIQUID LEVEL
MANHOLE COVER
LOCATE APPROXIMATELY AT CENTER
OF RESERVOIR TANK
PROVIDE ONE FLANGED END
AS SHOWN. SEE NOTE 12
12 (APPROX)
FOR FDN
GALLERY DECK (REF)
DAMPER ACCUMULATOR (REF)
320560-1
ADAPTER
TORQUE FROM 30-35 FT LBS
MANIFOLD (REF)
MS28778-6
AN6227-12
A404728-1
A414240-1
TORQUE NUT FROM
90 TO 110 FT LBS
HIGH PRESSURE
LOW PRESSURE
PIPING
¼ IPS
LOW PRESSURE TO
REPLENISHING TANK
OR DRAIN
"D"
SEE DETAIL A
SEE DETAIL B
"E"
PIPING ¼ IPS
SEE NOTE 4
FLUID FILTER
SEE NOTE 6
P-1 DAMPER SHEAVE
DETAIL A
SCALE NONE
MS28778-6
316293-2
DETAIL B
SCALE NONE
"D1"
SEE DETAIL A
SEE DETAIL B
"E1"
P-2 DAMPER SHEA

FLIGHT DECK (REF)

PORTABLE FUNNEL
SEE NOTE 2

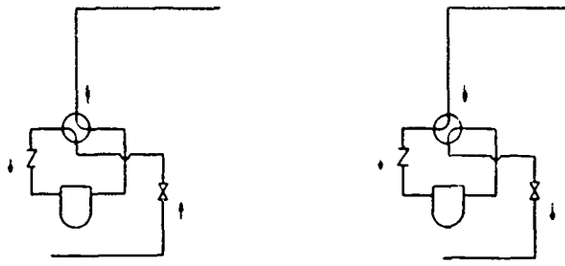
CK PLATE

AIR

ARATOR
CITY

LY AT CENTER

GED END
E 12



FILL POSITION

DRAIN POSITION

SCHEMATIC DIAGRAM
4 WAY, 2 POSITION PLUG COCK

CHARGING LINE (REF)

RELIEF VALVE SET AT 120 PSI

REDUCER, 1/4 x 1/2 IPS

"F"

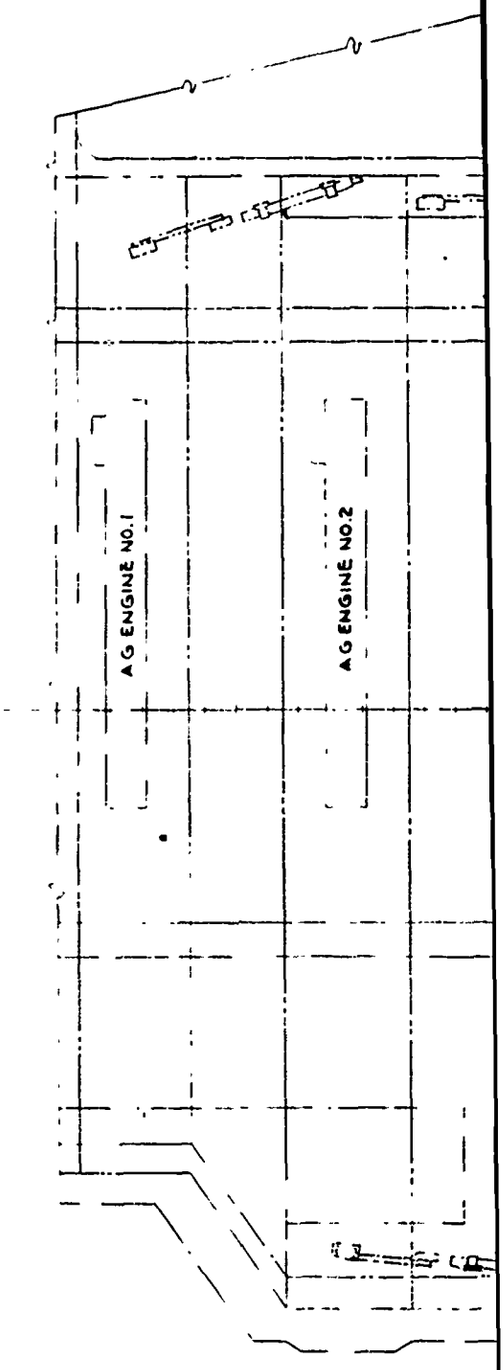
ER
6

ER SHEAVE (PORT)

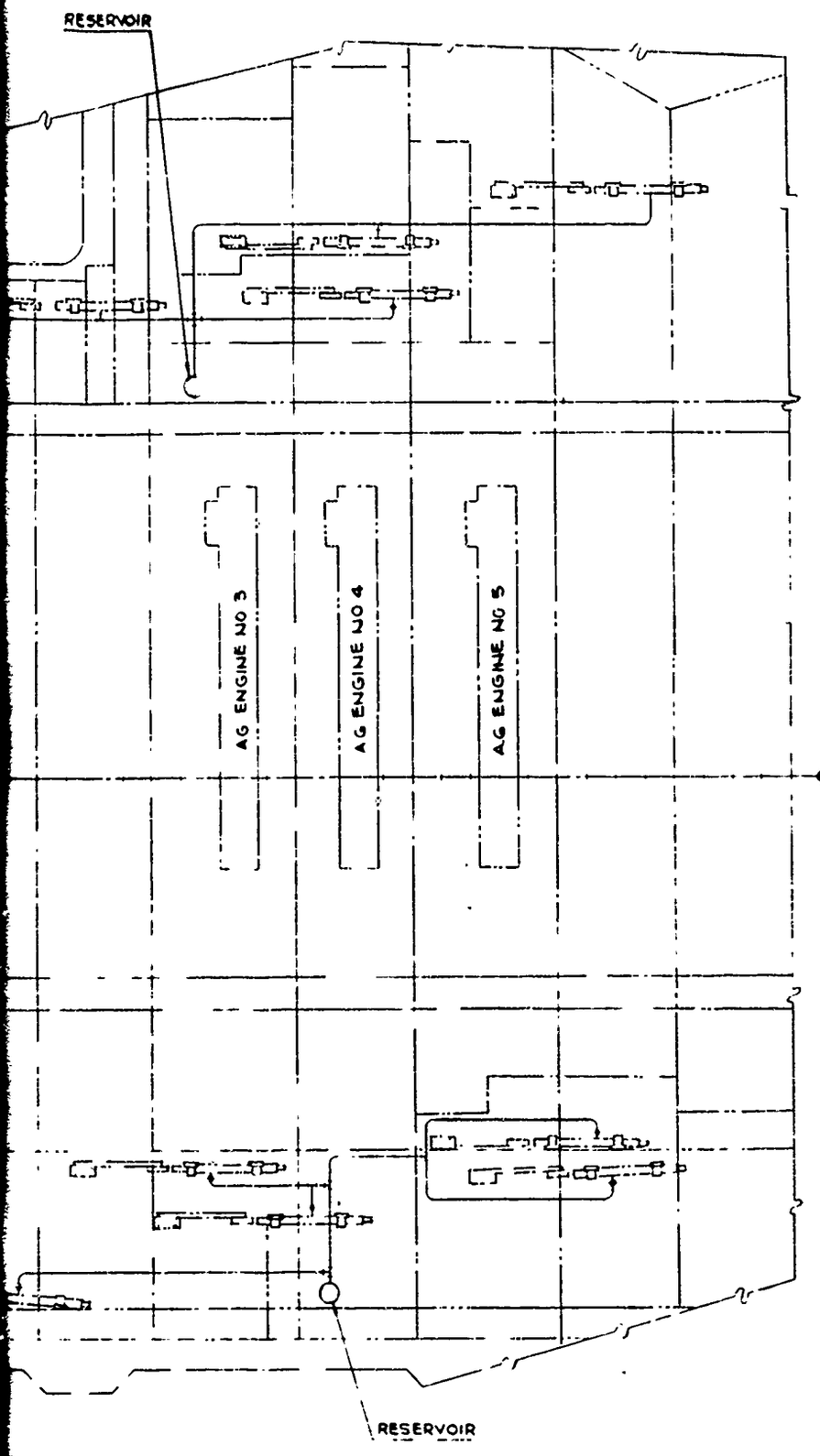
"F1"

PIPING TO OTHER
SHEAVE DAMPERS

PER SHEAVE (PORT)



616109



LEGEND:

- BLEED VALVE
- 4 WAY, 2 POSITION PLUG COCK
- FILTER
- RELIEF VALVE
- CHECK VALVE
- GLOBE VALVE

PLAN VIEW - GALLERY DECK
SHOWING SHEAVE DAMPER INSTALLATION DRAIN & FILL ARRANGEMENT
SEE NOTE 8

NOTES

1. THIS DRAWING SH... FLIGHT DECK AND ... DAMPER SHEAV... TO A COMMON RE...
   A. TO DRAIN FLU... AS SHOWN FO... ARE TO BE T...
      (1) CHECK FLU...
      (2) BLOW DOWN...
      (3) OPEN RES...
      (4) OPEN 4 WAY... AND VALVE... RESERVOI...
      (5) TRAPPED... CONTAINE...
      (6) AFTER DES... VALVES "C"...
   B. TO FILL OR RE... STEPS ARE TO...
      (1) CLOSE RES...
      (2) VENT ACCU... PLUG COCK... DESIRED LE...
      (3) CLOSE VAL... BEFORE AC...
2. PROVIDE A WATE... OPENING. WHEN... N THE ARRESTI...
3. VALVE A40472... MANIFOLD SHA... PRESSURE OF ... PERMANENT DE...
4. PIPING SYSTEM... RESISTANT (CO... COMPLY WITH M... PIPING SHALL...
5. ALL MATERIALS... SHALL BE FURN...
6. ALL FILTERS S... WITH FLUID MI... PRESSURE OF... DISC TYPE, FU... AND CAPABLE... MIN SIZE OF...
7. A SCHEMATIC D... SHALL BE PRO...
8. THE FLUID DRA... LOCATED AMON...
(MI01) 9. CONSTRUCTION...
   A. CORROSION R... WELD WITH E...
   B. CORROSION R... FS 347 CLAD... MIL-E-22200... (OUTSIDE) WIT...
10. THE INSTALLING A... WITH A RANGE OF... TO THE STOWAGE... PROPER OPERA...
(MI02) 11. ALL LOW PRESS... WITHSTAND A MA...
12. THE MANHOLE ... TANK FLANGED ... CLEANING
(MI03) 13. PIPES, FITTINGS... FROM SCALE ...
(MI04) 14. AIR LINES SHA... DIRECTIONAL ... VALVE ON PRE... IN ACCORDANC...

CLASSIFICATION ...
CRITICAL - C TO ...
MAJOR MI01 T...
MINOR ALL OTH...

NOTES

1. THIS DRAWING SHOWS [illegible] FLIGHT DECK AND A FLUID DRAIN AND FILL SYSTEM [illegible] DAMPER SHEAVE INSTALLATION. ALL ACCUMULATORS ARE CONNECTED TO A COMMON RESERVOIR PORT & STBD SIDES HAVE INDIVIDUAL RESERVOIRS
   A. TO DR. IN FLUID FROM THE DAMPER SHEAVE ASSEMBLY SUPPORT AS SHOWN FOR A TYPICAL OPERATION, THE FOLLOWING STEPS ARE TO BE TAKEN:
      (1) CHECK FLUID LEVEL IN RESERVOIR.
      (2) BLOW DOWN PRESSURE IN ACCUMULATOR TO 100 PSI APPROX
      (3) OPEN RESERVOIR VENT AND ASSURE THAT VALVE 'C' IS CLOSED
      (4) OPEN 4WAY, 2 POSITION PLUG COCK TO DRAINING POSITION AND VALVE 'E' FLUID WILL NOW FLOW THRU FILTER TO RESERVOIR EXCEPT FLUID TRAPPED IN MANIFOLDS.
      (5) TRAPPED MANIFOLD FLUID CAN BE DRAINED INTO A CONTAINER FROM VALVE 'E' IF NECESSARY.
      (6) AFTER DESIRED LEVEL OF FLUID IS DRAINED INTO THE RESERVOIR VALVES 'C' AND 'E' CAN BE CLOSED.
   B. TO FILL OR RETURN FLUID TO THE ACCUMULATORS, THE FOLLOWING STEPS ARE TO BE TAKEN.
      (1) CLOSE RESERVOIR VENT
      (2) VENT ACCUMULATOR, OPEN VALVES 'C' AND 'E' AND 4 WAY 2 POSITION PLUG COCK TO FILLING POSITION UNTIL THE FLUID REACHES DESIRED LEVEL IN ACCUMULATORS
      (3) CLOSE VALVES 'C' AND 'E' CAUTION: VALVE 'D' MUST BE CLOSED BEFORE ACCUMULATORS ARE CHARGED TO OPERATING PRESSURE
2. PROVIDE A WATER-TIGHT COVER ON THE FLIGHT DECK FOR THE FUNNEL OPENING. WHEN NOT IN USE, THE PORTABLE FUNNEL CAN BE STORED IN THE ARRESTING GEAR STORE ROOM.
3. VALVE A404728-IN AND COMPONENTS CONNECTING IT TO MANIFOLD SHALL WITHSTAND A MAXIMUM HYDROSTATIC TEST PRESSURE OF 5000 PSI FOR 15 MINUTES WITH OUT LEAKAGE OR PERMANENT DEFORMATION.
4. PIPING SYSTEM MATERIALS AND RESERVOIR TO BE CORROSION RESISTANT (COPPER, CU-NI, ST STEEL OR BRONZE) AND SHALL COMPLY WITH MIL-STD-777 UNLESS OTHERWISE SPECIFIED, PIPING SHALL BE 1/2 IPS OR EQUIVALENT.
5. ALL MATERIALS NEEDED TO INSTALL STOWAGE SYSTEM SHALL BE FURNISHED BY THE INSTALLING ACTIVITY
6. ALL FILTERS SHALL BE SUITABLE IN ALL RESPECTS FOR USE WITH FLUID MIL-H-5559, ETHYLENE GLYCOL, AT A WORKING PRESSURE OF 125 PSI. FILTER ELEMENT SHALL BE METAL DISC TYPE, FUNCTIONING BY EDGE FILTRATION PRINCIPLE AND CAPABLE OF REMOVING FOREIGN PARTICLES OF A MIN SIZE OF 125 MICRONS
7. A SCHEMATIC DIAGRAM WITH GENERAL OPERATING INSTRUCTIONS, SHALL BE PROVIDED IN EACH DAMPER SHEAVE COMPARTMENT
8. THE FLUID DRAIN AND FILL RESERVOIR SHOULD BE CENTRALLY LOCATED AMONG ALL SHEAVE DAMPER INSTALLATIONS
(MI01) 9. CONSTRUCTION AND MATERIAL OF TANK TO BE AS FOLLOWS:
   A. CORROSION RESISTING STEEL PLATE PER SPEC QQ-S-766 CL 347 WELD WITH ELECTRODE MIL-E-22200/2A TYPE MIL-347-15 OR -16.
   B. CORROSION RESISTING CLAD STEEL PLATE QQ-S-682 CL FS 32 OR FS 347 CLAD ON INSIDE ONLY, WELD CLAD SIDE WITH ELECTRODE MIL-E-22200/2A TYPE MIL-347-15 OR -16 WELD NCLAD SIDE (OUTSIDE) WITH ELECTRODE MIL-E-22200/1, TYPE MIL-7018
10. THE INSTALLING ACTIVITY SHALL PROVIDE AN AIR PRESSURE GAUGE WITH A RANGE OF 0 TO 200 PSI AT AN APPROPRIATE LOCATION CLOSE TO THE STOWAGE TANK WHERE OPERATING PERSONNEL CAN ASCERTAIN PROPER OPERATING PRESSURE.
(MI02) 11. ALL LOW PRESSURE HARDWARE, PIPING, VALVES, RESERVOIR ETC SHALL WITHSTAND A MAXIMUM HYDROSTATIC TEST PRESSURE OF 300 PSI
12. THE MANHOLE COVER IS PROVIDED TO ENABLE INSPECTION OF INTERIOR OF TANK FLANGED END OF TANK IS PROVIDED FOR ACCESS AND TO FACILITATE CLEANING
(MI03) 13. PIPES, FITTINGS AND VALVES TO BE THOROUGHLY CLEANED AND FREE FROM SCALE PRIOR TO INSTALLATION
MI04) 14. AIR LINES SHALL BE MARKED "AIR" (AIR LOW PRESSURE) AND WITH DIRECTIONAL FLOW ARROW IDENTIFICATION TO BE PLACED NEAR VALVE ON PRESSURE SIDE WHERE POSSIBLE PAINT SHALL BE BLACK IN ACCORDANCE WITH MIL-P-15549

PLUG COCK

CLASSIFICATION OF CHARACTERISTICS	
CRITICAL	NONE
MAJOR	MI01 TO MI04
MINOR	ALL OTHER CHARACTERISTICS

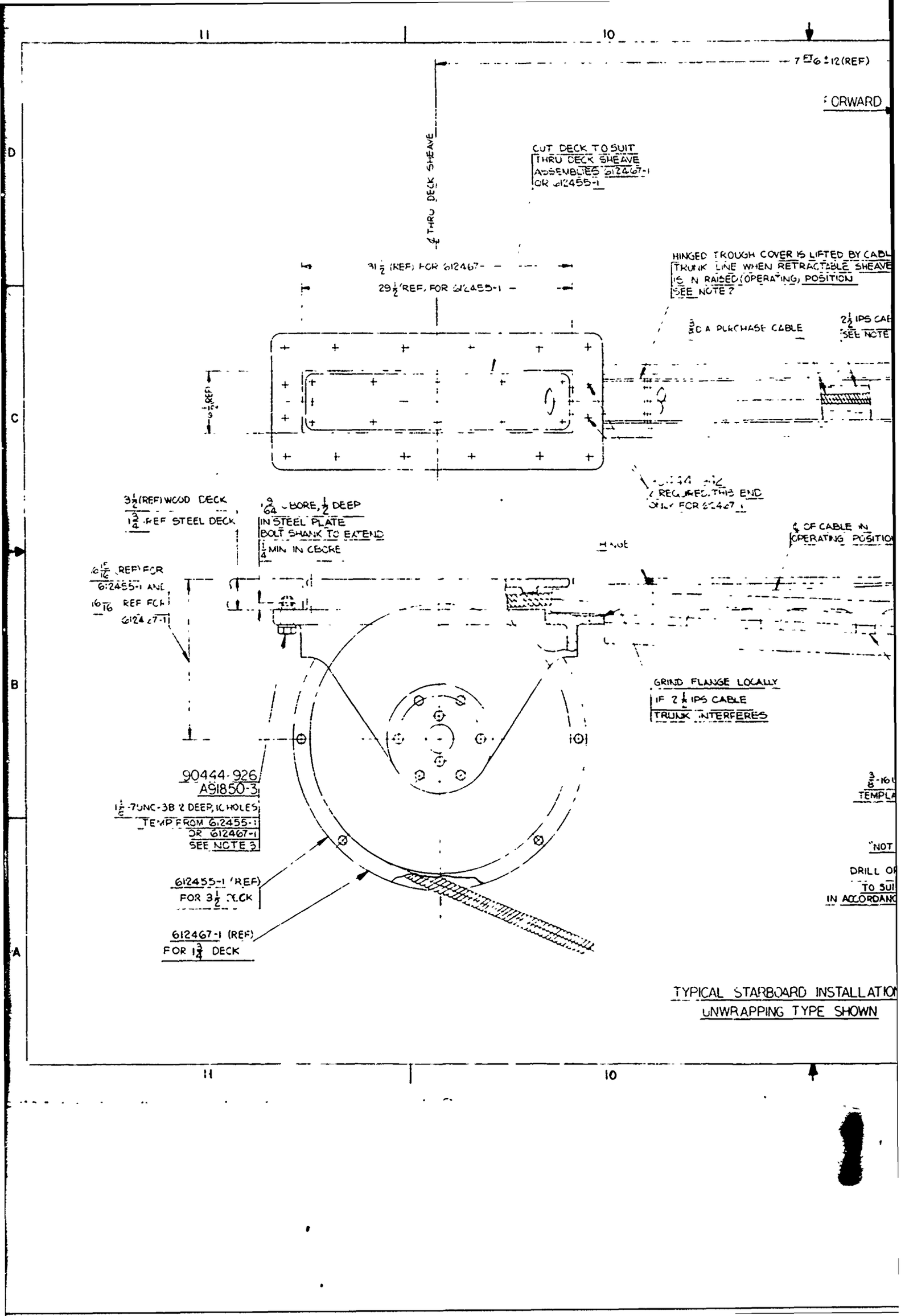
ENGINEERING DEPARTMENT (SE)
NAVAL AIR ENGINEERING CENTER PHILA PA 19112

TITLE
DRAIN AND FILL ARRANGEMENT
DAMPER SHEAVE FLUID
MK 7 MOD 3 ARRESTING ENGINE

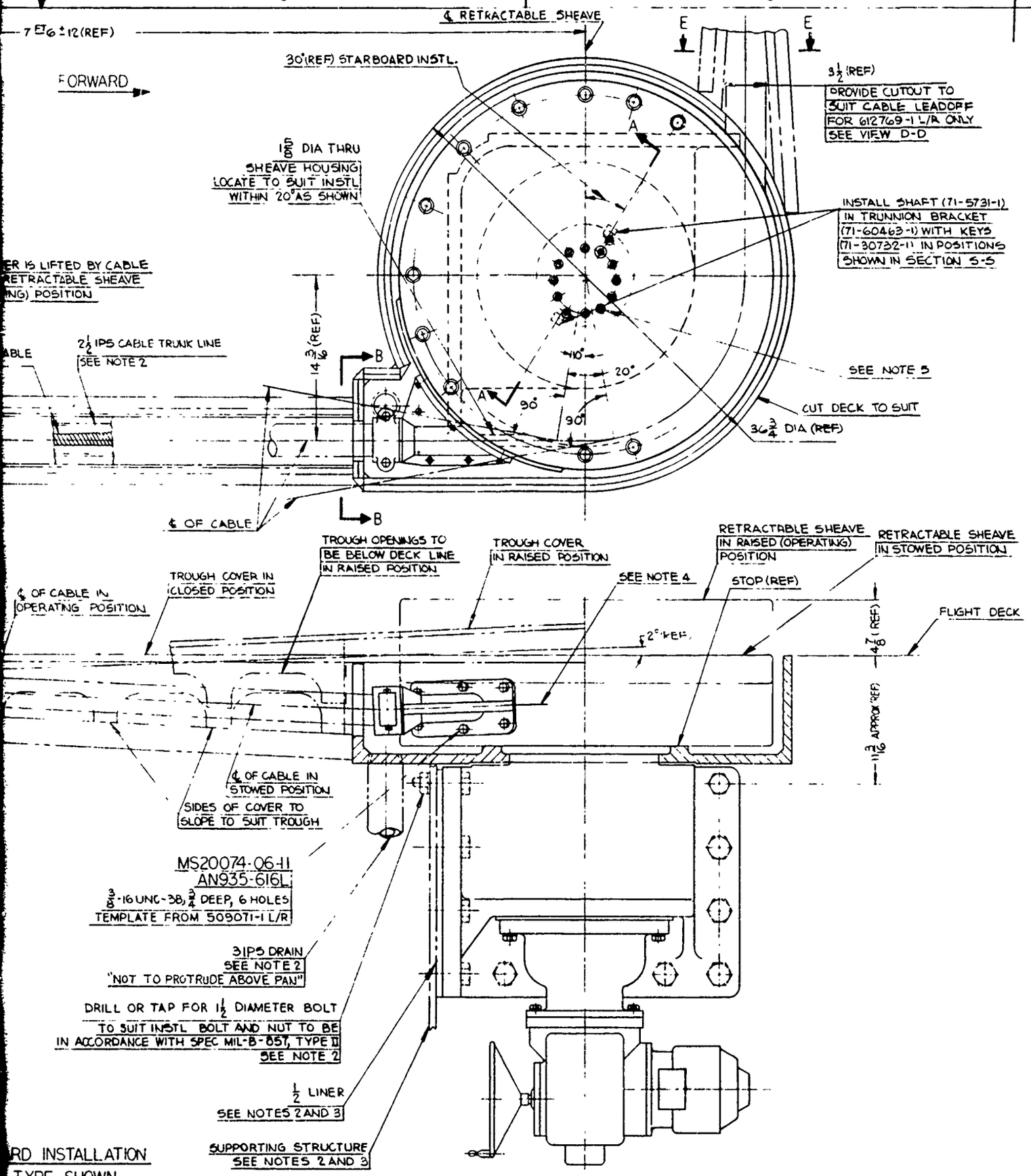
SIZE H | CAGE IDENT NO 80020 | DRAWING NO 616109 | SHEET

616109

FIGURE 9.

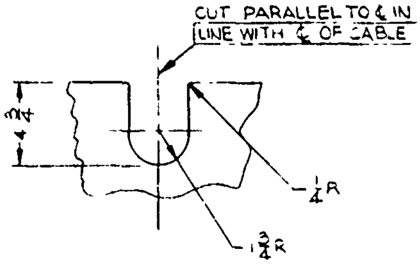


TYPICAL STARBOARD INSTALLATION
UNWRAPPING TYPE SHOWN

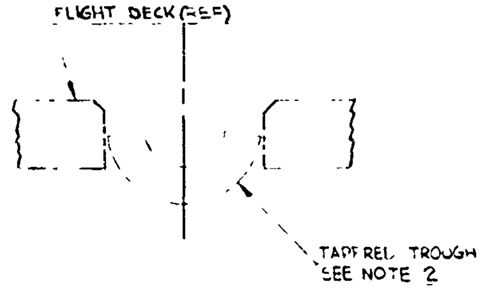

℄ RETRACTABLE SHEAVE
7 ET 6 ± 12 (REF)
30° (REF) STARBOARD INSTL.
FORWARD
E
E
3½ (REF)
PROVIDE CUTOUT TO SUIT CABLE LEADOFF FOR 612769-1 L/R ONLY SEE VIEW D-D
1 5/8 DIA THRU SHEAVE HOUSING LOCATE TO SUIT INSTL WITHIN 20° AS SHOWN
INSTALL SHAFT (71-5731-1) IN TRUNNION BRACKET (71-60463-1) WITH KEYS (71-30732-1) IN POSITIONS SHOWN IN SECTION 5-5
ER IS LIFTED BY CABLE RETRACTABLE SHEAVE NG) POSITION
2½ IPS CABLE TRUNK LINE SEE NOTE 2
14 3/16 (REF)
B
A
10°
20°
90°
90°
SEE NOTE 5
CUT DECK TO SUIT
36 3/4 DIA (REF)
℄ OF CABLE
TROUGH OPENINGS TO BE BELOW DECK LINE IN RAISED POSITION
TROUGH COVER IN RAISED POSITION
RETRACTABLE SHEAVE IN RAISED (OPERATING) POSITION
RETRACTABLE SHEAVE IN STOWED POSITION
TROUGH COVER IN CLOSED POSITION
SEE NOTE 4
STOP (REF)
℄ OF CABLE IN OPERATING POSITION
2° REF.
FLIGHT DECK
4 7/8 (REF)
11 3/16 APPROX (REF)
℄ OF CABLE IN STOWED POSITION
SIDES OF COVER TO SLOPE TO SUIT TROUGH
MS20074-06-11
AN935-616L
3/8-16 UNC-3B, 3/4 DEEP, 6 HOLES
TEMPLATE FROM 509071-1 L/R
3 IPS DRAIN SEE NOTE 2
"NOT TO PROTRUDE ABOVE PAN"
DRILL OR TAP FOR 1½ DIAMETER BOLT
TO SUIT INSTL BOLT AND NUT TO BE IN ACCORDANCE WITH SPEC MIL-B-857, TYPE II SEE NOTE 2
½ LINER
SEE NOTES 2 AND 3
SUPPORTING STRUCTURE SEE NOTES 2 AND 3
RD INSTALLATION
TYPE SHOWN

612796

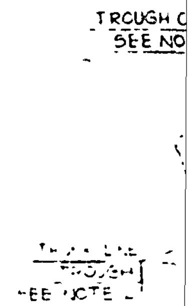
7 6

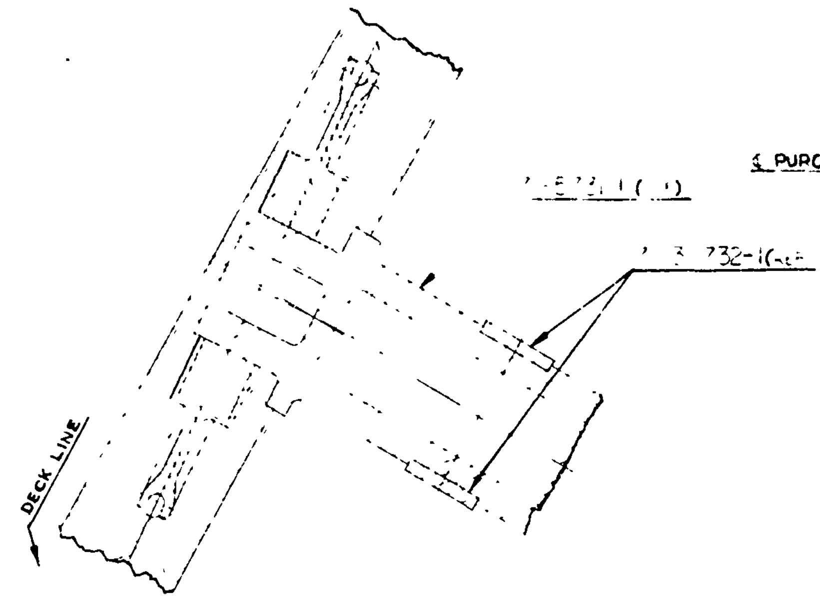


VIEW E-E
ROTATED 180°

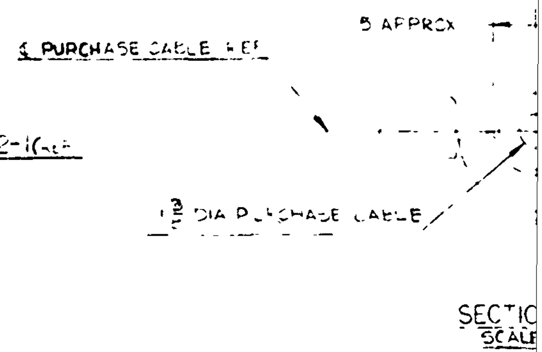


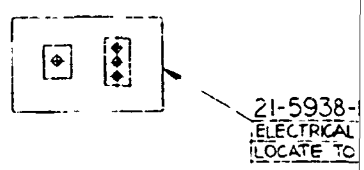
SECTION C-C
SCALE NONE



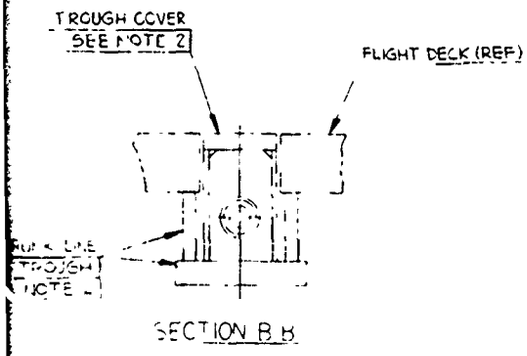


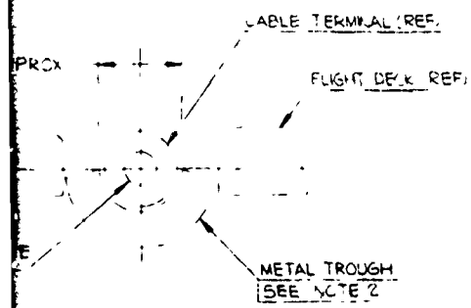
SECTION A-A
SCHEMATIC
FOR DETAILS NOT SHOWN
REF DRAWING NO
(WRAPPING SHEAVE ASSY)
OR (UNWRAPPING
SHEAVE ASSY)





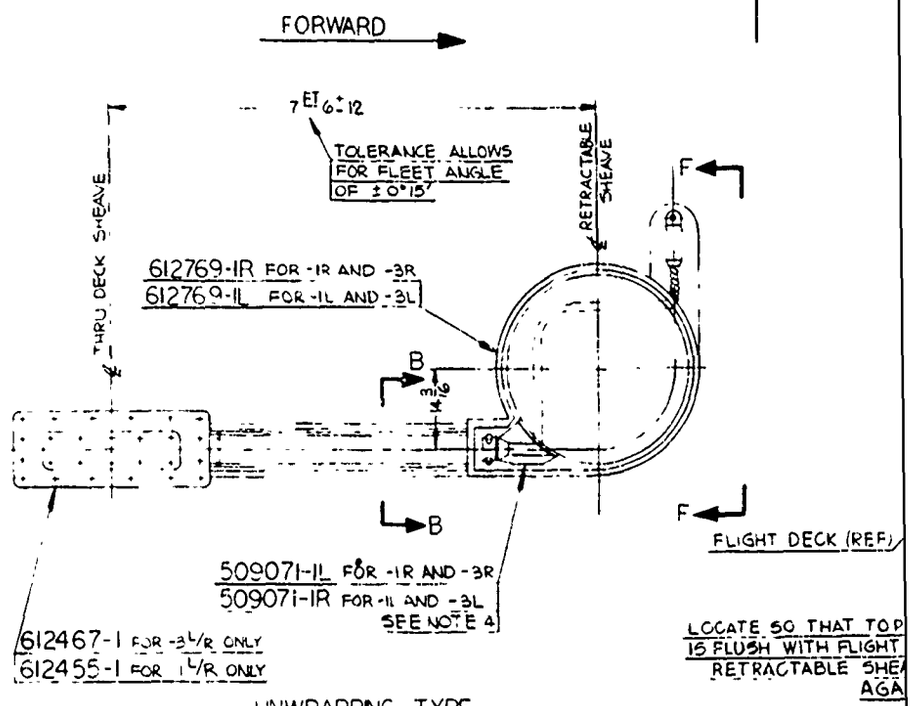
7 6



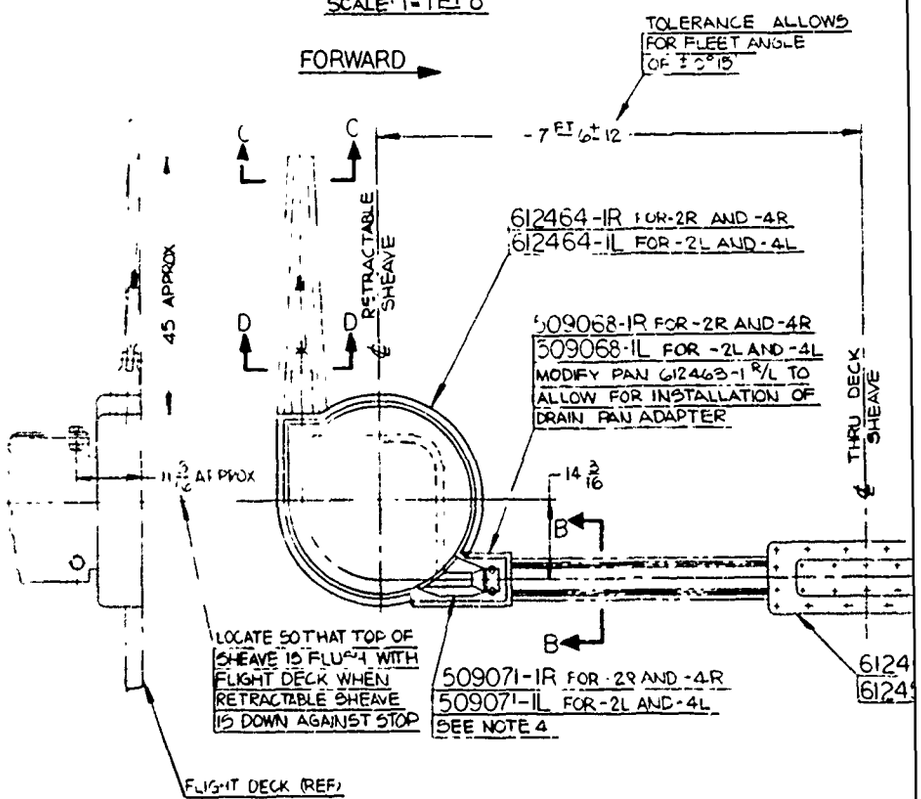


SECTION D-D
SCALE: NONE

21-5938-1
ELECTRICAL WIRING
LOCATE TO SUIT

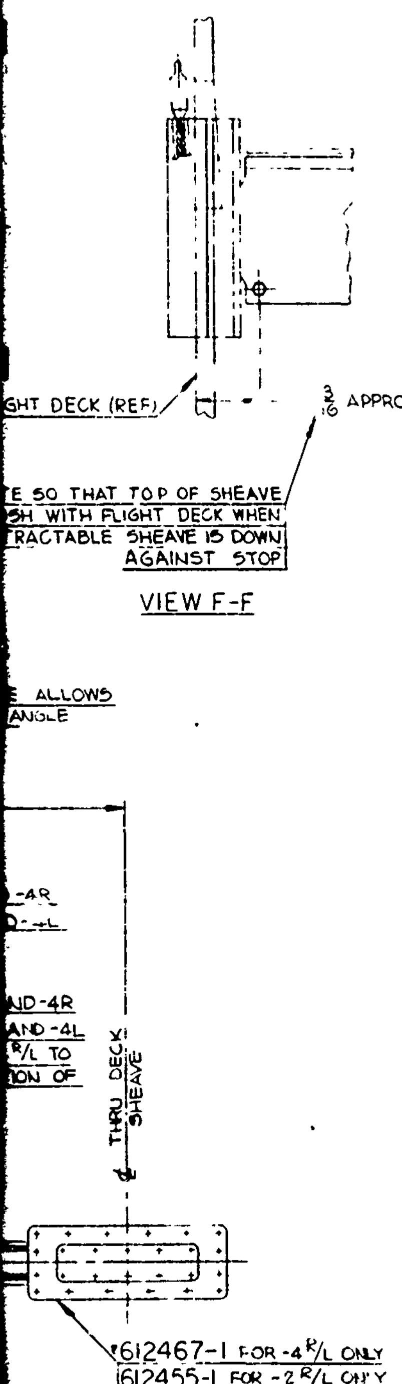


UNWRAPPING TYPE
-1R AND -3R STARBOARD INSTALLATION (SHOWN)
-1L AND -3L PORT INSTALLATION (OPPOSITE)
FOR DETAILS NOT SHOWN, SEE TYPICAL INSTALLATION
SCALE: 1 = 1 ET 0



WRAPPING TYPE
-2R AND -4R STARBOARD INSTALLATION (SHOWN)
-2L AND -4L PORT INSTALLATION (OPPOSITE)
FOR DETAILS NOT SHOWN SEE TYPICAL INSTALLA
SCALE: 1 = 1 ET 0

612796



NOTES:

1. THIS DRAWING SHOWS DATA NECESSARY FOR THE PORT AND STARBOARD INSTALLATION OF RETRACTABLE SHEAVE ASSEMBLIES 612769-1 L/R AND 612464-1 L/R.
2. TROUGH COVER PLATE, METAL TROUGHS, 2 1/2 PIPE SIZE CABLE TRUNK LINE, 3 PIPE SIZE DRAIN LINE, LINERS, SUPPORTING STRUCTURES AND BOLTS TO BE FURNISHED UNDER THE COGNIZANCE OF THE INSTALLING ACTIVITY.
3. THE DESIGN OF SUPPORTING STRUCTURES MUST BE BASED ON THE 175,000 POUNDS NOMINAL BREAKING STRENGTH OF 1 3/8 DIAMETER, 6x19 WIRE ROPE, SPEC MIL-W-6015, WRAPPED 180° AROUND SHEAVE.
4. FAIRLEAD ASSEMBLY 509071-1 L/R MUST BE COCKED ON RETRACTABLE SHEAVE HOUSING SO THAT CENTERLINE COINCIDES WITH 2° ANGLE BETWEEN DECK SHEAVE AND FAIRLEAD SHEAVE WHEN RETRACTABLE SHEAVE IS IN RAISED (OPERATING) POSITION, SHIM OPEN CORNERS WHERE NECESSARY. WELD FAIRLEAD ASSEMBLY 509071-1 L/R IF MOUNTING BOLTS OF FAIRLEAD ASSEMBLIES ARE OBSTRUCTED BY THE SHEAVE HOUSING BOLTS. 2 5/16 DIAMETER COUNTERBORE IN FAIRLEAD ASSEMBLY 509071-1L/R MUST BE MADE LARGER TO PERMIT 2 1/2 PIPE SIZE. CABLE TRUNK TO SWING BETWEEN EXTREME LIMITS SHOWN.
5. FOR INSTALLING AND REMOVAL OF RETRACTABLE SHEAVE ASSEMBLIES 612464-1 AND 612769-1 SEE NAEL DRAWING NUMBER 407768-1.
6. BOLTING REQUIREMENTS ARE TO BE IN ACCORDANCE WITH BUSHIPS INSTRUCTION 9110.54.
7. [illegible] MENSIONS AND DESIGNATIONS SHALL BE [illegible] D IN ACCORDANCE WITH HANDBOOK H28 [illegible] D-9, RESPECTIVELY.
8. FINISH IN ACCORDANCE WITH MPR 1201-12 FOR -1 L/R AND -2 L/R.

-4L	-4R	-3L	-3R	-2L	-2R	-1L	-1R	NEXT ASSEMBLY	QTY REQD	PART NUMBER	DE...
1				1						509068-1L	DRAIN
	1				1					509068-1R	DRAIN
6	6	6	6	6	6	6	6			MS20074-06-11	B
6	6	6	6	6	6	6	6			AN935-616L	LOC
16	16	16	16	16	16	16	16			A91850-9	LOCKW
2	2	2	2							90444-942	BOL
14	14	14	14	16	16	16	16			90444-926	BO
		1				1				612769-1L	RETRA
			1				1			612769-1R	RETRA
1	1	1	1							612467-1	THRU
1				1						612464-1L	RETRA
	1				1					612464-1R	RETRA
				1	1	1	1			612455-1	THRU
1			1	1			1			509071-1L	FAIRLE
	1	1			1	1				509071-R	FAIRLE
1	1	1	1	1	1	1	1			21-5938-1	ELECTR
										612796-4L/R	RETRAC
										612796-3L/R	RETRAC
										612796-2L/R	RETRAC
										612796-1L/R	RETRAC
NO REQUIRED PER ASSEMBLY											

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ±1/64 DECIMALS ±.00 ANGLES ±1/2°

THESE DOCUMENTS ALSO ARE A PART OF THIS DRAWING MPR 1201

MECHANICAL FINISH SURFACE ROUGHNESS IN MICROINCHES

√ THIS SYMBOL EMBRACING THE SURFACE ROUGHNESS IN MICRO INCHES REPRESENTS THE MAXIMUM ACCEPTABLE ROUGHNESS AND MAY BE PRODUCED BY ANY MECHANICAL PROCESS REF SPEC MIL-STD 10

DESIGNED MK7 MOD1, FOR MK7 MOD2, MK7 MOD3

REF

DRAWN | CHECKED | MATERIAL | ANALYZED | SUPERVISOR | APPROVED | APPROVED

CLASSIFICATION OF CHARACTERISTICS

CRITICAL C TO C

MAJOR -M TO M

MINOR ALL OTHER CHARACTERISTICS

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVED
	A	CLASS R CHG NO REV NOTICE. REPLACES DWG 612796 NO REV WITHOUT CHG RA RD	[illegible]	7K

NOTES:

1. THIS DRAWING SHOWS DATA NECESSARY FOR THE PORT AND STARBOARD INSTALLATION OF RETRACTABLE SHEAVE ASSEMBLIES 612769-1 L/R AND 612464-1 L/R.
2. TROUGH COVER PLATE, METAL TROUGHS, 2 1/2 PIPE SIZE CABLE TRUNK LINE, 3 PIPE SIZE DRAIN LINE, LINERS, SUPPORTING STRUCTURES AND BOLTS TO BE FURNISHED UNDER THE COGNIZANCE OF THE INSTALLING ACTIVITY.
3. THE DESIGN OF SUPPORTING STRUCTURES MUST BE BASED ON THE 175,000 POUNDS NOMINAL BREAKING STRENGTH OF 1 3/8 DIAMETER, 6x19 WIRE ROPE, SPEC MIL-W-6015, WRAPPED 180° AROUND SHEAVE.
4. FAIRLEAD ASSEMBLY 509071-1 L/R MUST BE COCKED ON RETRACTABLE SHEAVE HOUSING SO THAT CENTERLINE COINCIDES WITH 2° ANGLE BETWEEN DECK SHEAVE AND FAIRLEAD SHEAVE WHEN RETRACTABLE SHEAVE IS IN RAISED (OPERATING) POSITION. SHIM OPEN CORNERS WHERE NECESSARY. WELD FAIRLEAD ASSEMBLY 509071-1 L/R IF MOUNTING BOLTS OF FAIRLEAD ASSEMBLIES ARE OBSTRUCTED BY THE SHEAVE HOUSING BOLTS. 2 15/16 DIAMETER COUNTERBORE IN FAIRLEAD ASSEMBLY 509071-1 L/R MUST BE MADE LARGER TO PERMIT 2 1/2 PIPE SIZE. CABLE TRUNK TO SWING BETWEEN EXTREME LIMITS SHOWN.
5. FOR INSTALLING AND REMOVAL OF RETRACTABLE SHEAVE ASSEMBLIES 612464-1 AND 612769-1 SEE NAEL DRAWING NUMBER 407768-1.
6. BOLTING REQUIREMENTS ARE TO BE IN ACCORDANCE WITH BUSHIPS INSTRUCTION 9110.54.
7. THREAD DIMENSIONS AND DESIGNATIONS SHALL BE INTERPRETED IN ACCORDANCE WITH HANDBOOK H28 AND MIL-STD-9, RESPECTIVELY.
8. FINISH IN ACCORDANCE WITH MPR 1201-12 FOR -1 L/R AND -2 L/R.

-4L	-4R	-3L	-3R	-2L	-2R	-1L	-1R	NEXT ASSEMBLY	QTY REQD	PART NUMBER	DESCRIPTION	STOCK	MATERIAL	SPECIFICATION	UNIT WT	ZONE
1				1						509068-1L	DRAIN PAN ADAPTER					
	1				1					509068-1R	DRAIN PAN ADAPTER					
6	6	6	6	6	6	6	6			MS20074-06-11	BOLT					
6	6	6	6	6	6	6	6			AN935-616L	LOCKWASHER					
16	16	16	16	16	16	16	16			A91850-3	LOCKWASHER					
2	2	2	2							90444-942	BOLT					
14	14	14	14	16	16	16	16			90444-926	BOLT					
		1				1				612769-1L	RETRACTABLE SHEAVE ASSEMBLY					
			1				1			612769-1R	RETRACTABLE SHEAVE ASSEMBLY					
1	1	1	1							612467-1	THRU DECK SHEAVE ASSEMBLY					
1				1						612464-1L	RETRACTABLE SHEAVE ASSEMBLY					
	1				1					612464-1R	RETRACTABLE SHEAVE ASSEMBLY					
				1	1	1	1			612455-1	THRU DECK SHEAVE ASSEMBLY					
1			1	1			1			509071-1L	FAIRLEAD ASSEMBLY					
	1	1			1	1				509071-1R	FAIRLEAD ASSEMBLY					
1	1	1	1	1	1	1	1			21-5938-1	ELECTRICAL WIRING					
										612796-4L/R	RETRACTABLE SHEAVE INSTL		(WRAPPING, STEEL DECK)			
										612796-3L/R	RETRACTABLE SHEAVE INSTL		(UNWRAPPING, STEEL DECK)			
										612796-2L/R	RETRACTABLE SHEAVE INSTL		(WRAPPING, WOOD DECK)			
										612796-1L/R	RETRACTABLE SHEAVE INSTL		(UNWRAPPING, WOOD DECK)			

NO REQUIRED PER ASSEMBLY

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS ±1/64, DECIMALS ±.00, ANGLES ±½°

THESE DOCUMENTS ALSO ARE A PART OF THIS DRAWING
MPR 1201

MECHANICAL FINISH SURFACE ROUGHNESS IN MICROINCHES
√ THIS SYMBOL EMBRACING THE SURFACE ROUGHNESS (IN MICRO INCHES) REPRESENTS THE MAXIMUM ACCEPTABLE ROUGHNESS AND MAY BE PRODUCED BY ANY MECHANICAL PROCESS
REF SPEC MIL STD 10

DESIGNED FOR MK7 MOD1, MK7 MOD2, MK7 MOD3
REF

DRAWN	CAPORALE	27FEB67
CHECKED	[illegible]	6 MAR 67
MATERIAL		
ANALYZED		
SUPERVISOR	[illegible]	[illegible]
APPROVED	[signature]	

ENGINEERING DEPARTMENT (SO)
NAVAL AIR ENGINEERING CENTER, PHILA., PA., 19112

TITLE
SHEAVE RETRACTABLE
WRAPPING AND UNWRAPPING INSTALLATION TYP
1 3/8 DIA CABLE, 28 PD

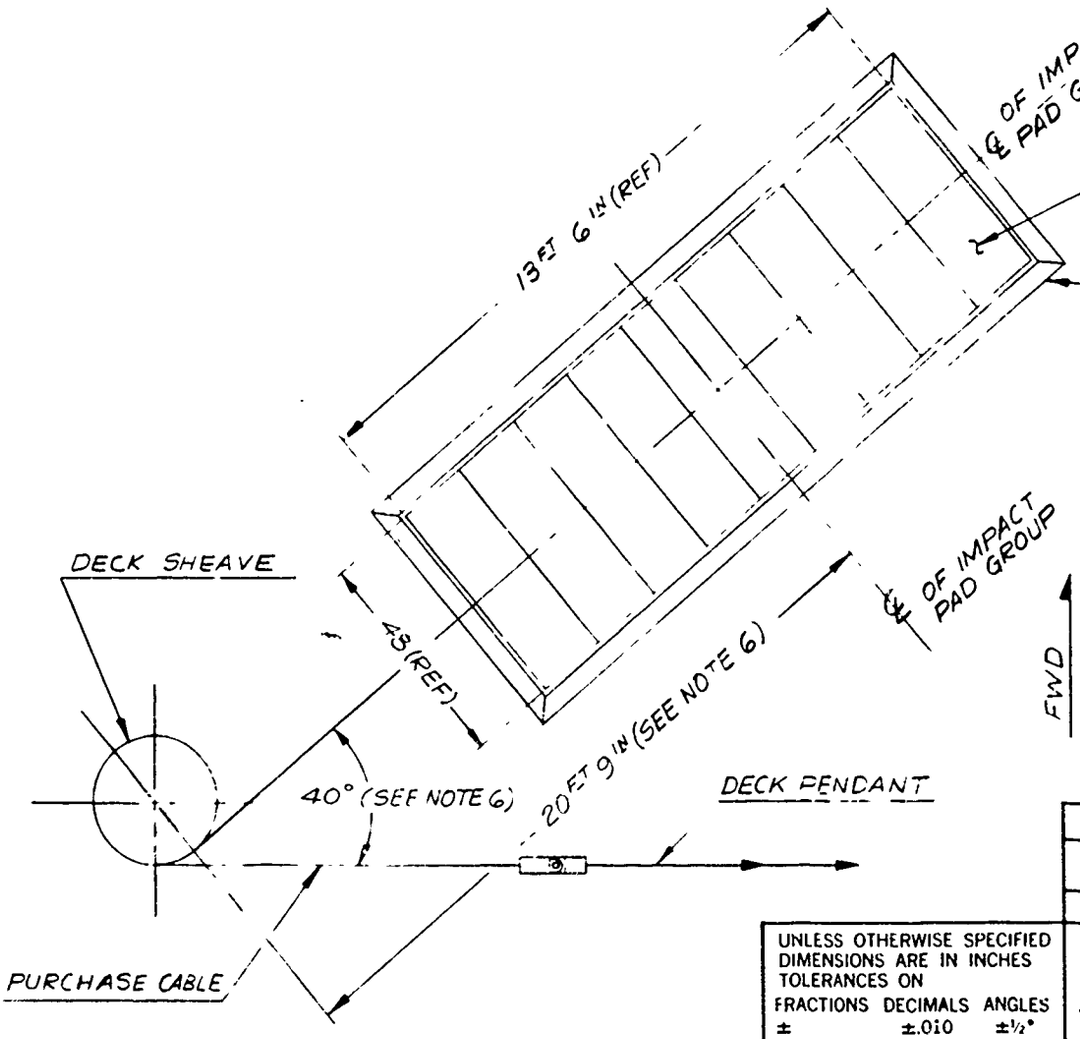
DRAWING NO 612796
SHEET

CLASSIFICATION OF CHARACTERISTICS
CRITICAL C TO C
MAJOR -M TO M
MINOR ALL OTHER CHARACTERISTICS

CLASSIFICATION OF CHARACTERISTICS
CRITICAL — C TO C
MAJOR — M TO M
MINOR — ALL OTHER CHARACTERISTICS

NOTES:

1. EACH IMPACT PAD GROUP SHALL CONSIST OF NINE (9) INDIVIDU POLYURETHANE IMPACT PAD ASSEMBLIES, 408320-1.
2. THE PAD GROUP SHALL BE INSTALLED IN A MANNER WHICH WILL FACILITATE READY REPLACEMENT OF INDIVIDUAL PADS
3. A RAMP SHALL BE PROVIDED AROUND EACH PAD GROUP TO FAC MOVEMENT OF AIRCRAFT. THE RAMP SHALL BE FAIRED IN WITH N FLIGHT DECK COMPOUND.
4. PROVIDE SUITABLE SLOTS IN RAMP TO PERMIT DRAINAGE
5. IMPACT PADS TO BE INSTALLED AT DECK PENDANT POSITIONS
6. FOR VESSELS IN SERVICE, THE LOCATING DIMENSIONS SHOWN FOR GENERAL GUIDANCE AND MAY BE MODIFIED TO MATCH CABLE TERMINAL MARKINGS IN DECK IF NECESSARY. THE ME IMPACT AREA OF ACTUAL CABLE TERMINAL MARKS IN DEC BE USED FOR LOCATING THE INTERSECTING CENTERLINES THE IMPACT PAD ARRANGEMENT.



PORT SHOWN
STBD OPPOSITE

		419045-1	
NEXT ASSEMBLY	QTY REQD	PART NUMBER	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ±.010 ±½°

THESE DOCUMENTS ALSO ARE A PART OF THIS DRAWING

MECHANICAL FINISH SURFACE ROUGHNESS IN MICROINCHES

✓ = SURFACE ROUGHNESS IN ACCORDANCE WITH ASA B46

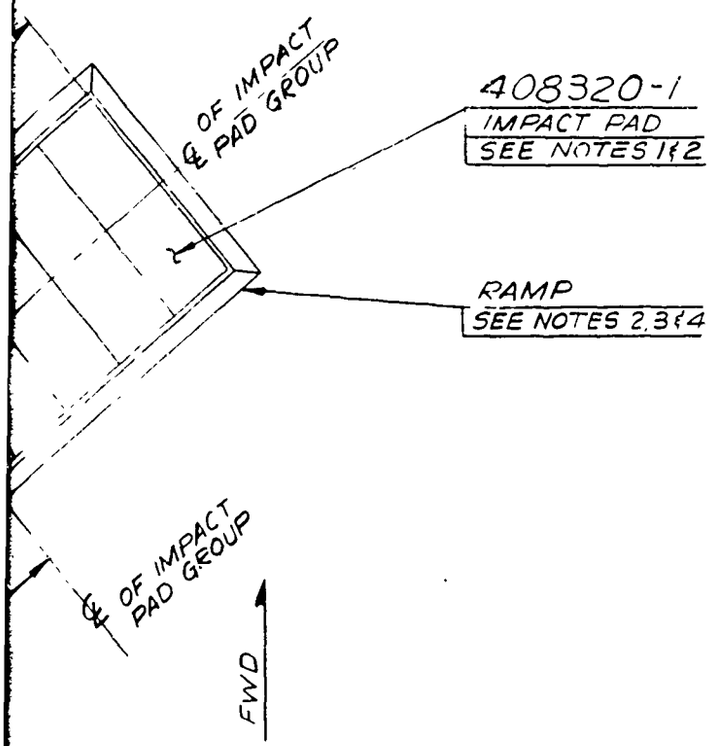
DESIGNED FOR MK 7 MOD 3

REF

DR
CHE
MAT
ANA
SUPE
APPR
APPR

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

UP SHALL CONSIST OF NINE (9) INDIVIDUAL
T PAD ASSEMBLIES, 408320-1.
BE INSTALLED IN A MANNER WHICH WILL
PLACEMENT OF INDIVIDUAL PADS
VIDED AROUND EACH PAD GROUP TO FACILITATE
T. THE RAMP SHALL BE FAIRED IN W TH NON-SKID
UND.
SLOTS IN RAMP TO PERMIT DRAINAGE.
TALLED AT DECK PENDANT POSITIONS ONLY.
CE, THE LOCAT NG DIMENSIONS SHOWN ARE
NCE AND MAY BE MODIFIED TO MATCH ACTUAL
RKINGS IN DECK IF NECESSARY. THE MEAN
UAL CABLE TERMINAL MARKS IN DECK SHALL
TING THE INTERSECTING CENTERL NES OF
RANGEMENT.



419045

PENDANT

NEXT ASSEMBLY	QTY REQD	PART NUMBER	DESCRIPTION	STOCK	MATERIAL	SPECIFICATION	UNIT WT
		419045-1	INSTALLATION DATA				

LIST OF MATERIALS

ESS OTHERWISE SPECIFIED
ENSIONS ARE IN INCHES
ERANCES ON
CTIONS DECIMALS ANGLES
±.010 ±½°

SE DOCUMENTS ALSO ARE A
T OF THIS DRAWING

MECHANICAL FINISH SURFACE ROUGHNESS IN MICROINCHES
✓ = SURFACE ROUGHNESS IN ACCORDANCE WITH ASA B46

DRAWN	JBARBELLA	2-1969
CHECKED	[signature] 3PM	2-27-69
MATERIAL	—	—
ANALYZED	—	—
SUPERVISOR	[signature]	2/27/69

DESIGNED FOR MK 7 MOD 3

REF

APPROVED [signature] DATE 4/27/69
APPROVED DATE

ENGINEERING DEPARTMENT (SI)
NAVAL AIR ENGINEERING CENTER, PHILA., PA. 19112

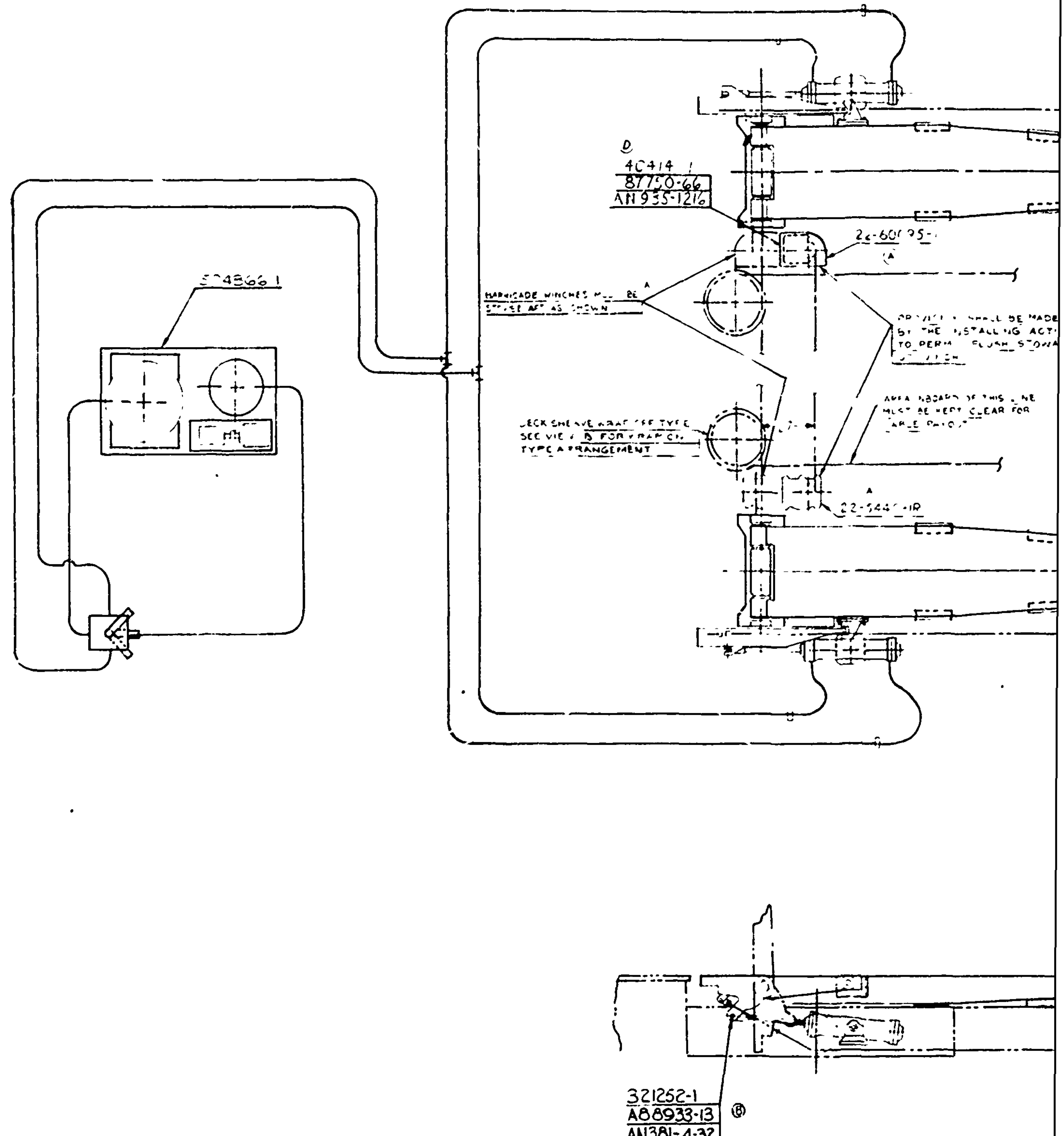
TITLE
INSTALLATION DATA
MARK 7 MOD 3 ARRESTING GEAR
TERMINAL IMPACT PAD
METAL DECK

SIZE	CODE IDENT	DRAWING NO.
C	NO. 80020	419045

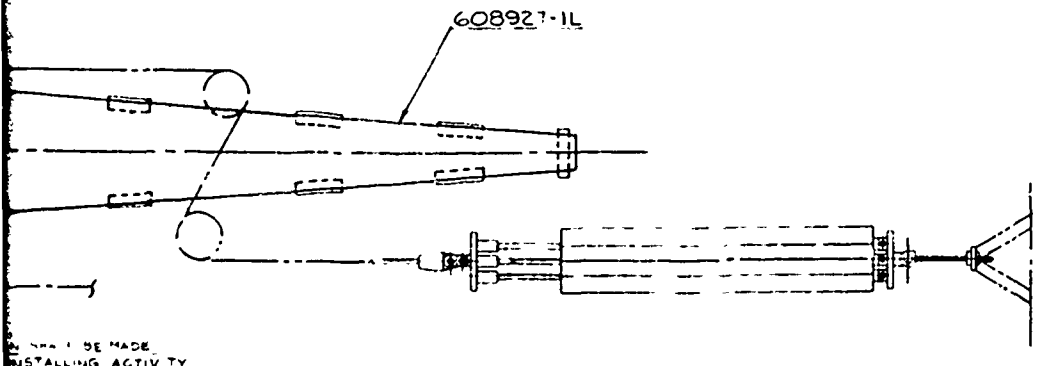
SCALE NONE SHEET

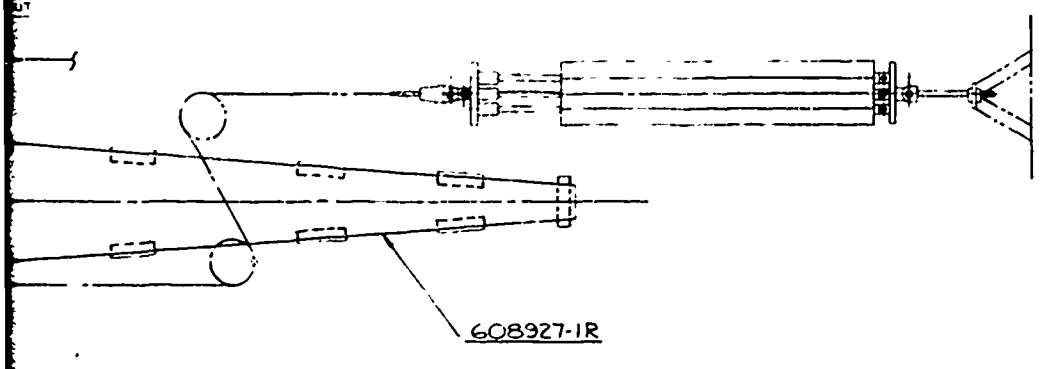
LIST 252

FIGURE 11

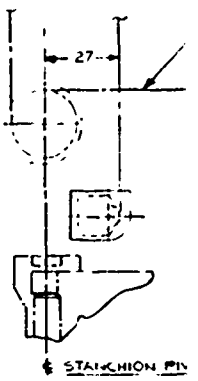


40414 1
87750-66
AN935-1216
321252-1
A88933-13
AN381-4-32
MS15001-2

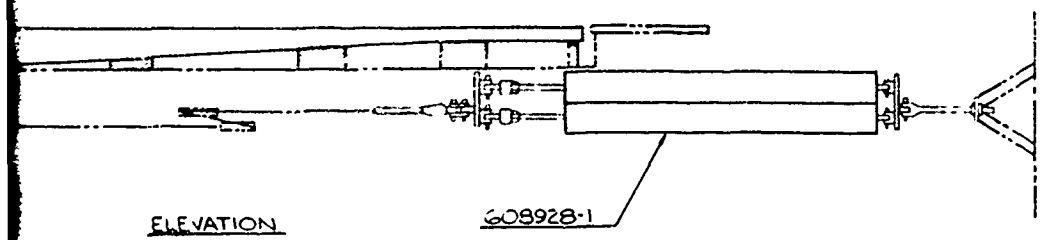




PLAN

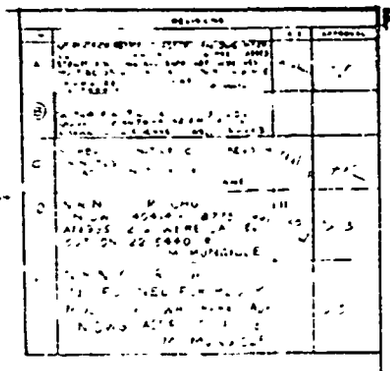


VIEW B
SCALE 1:12



ELEVATION

608926



AREA INBOARD OF THIS LINE MUST BE KEPT CLEAR FOR CABLE PAYOUT

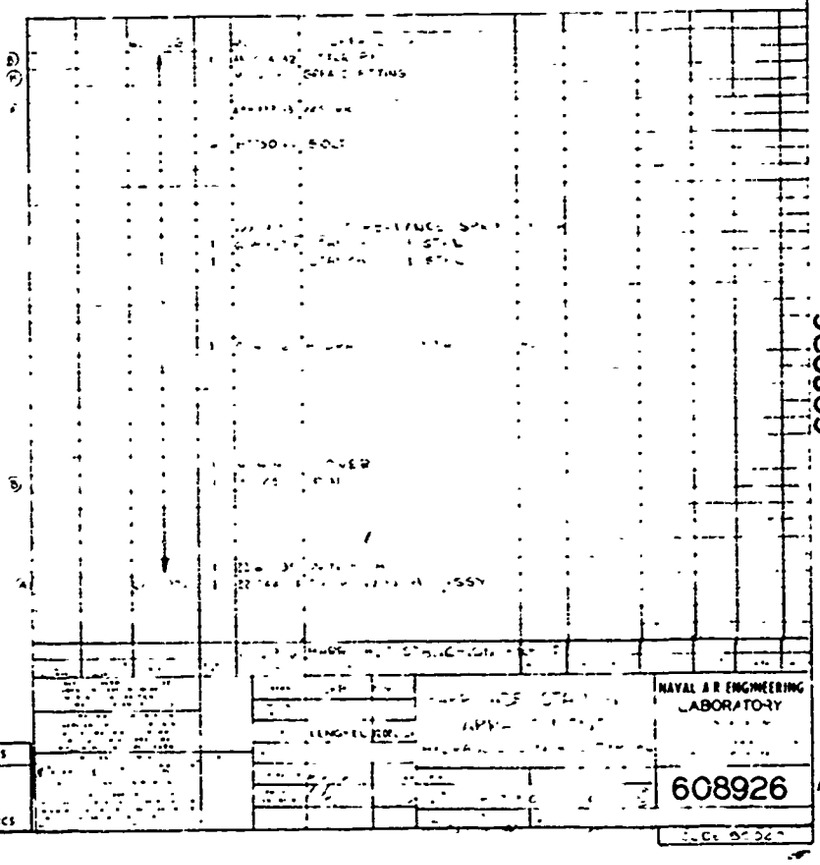
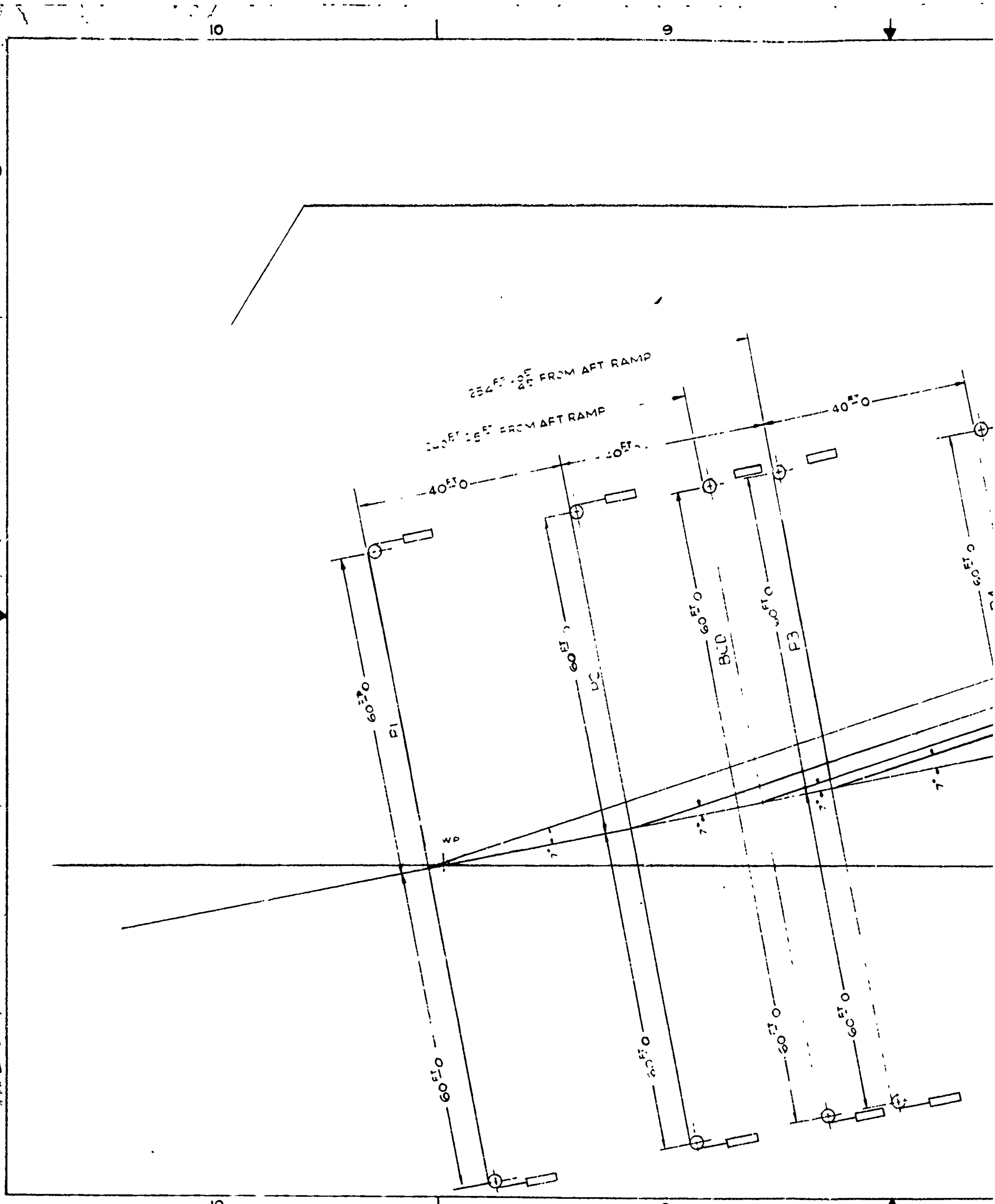
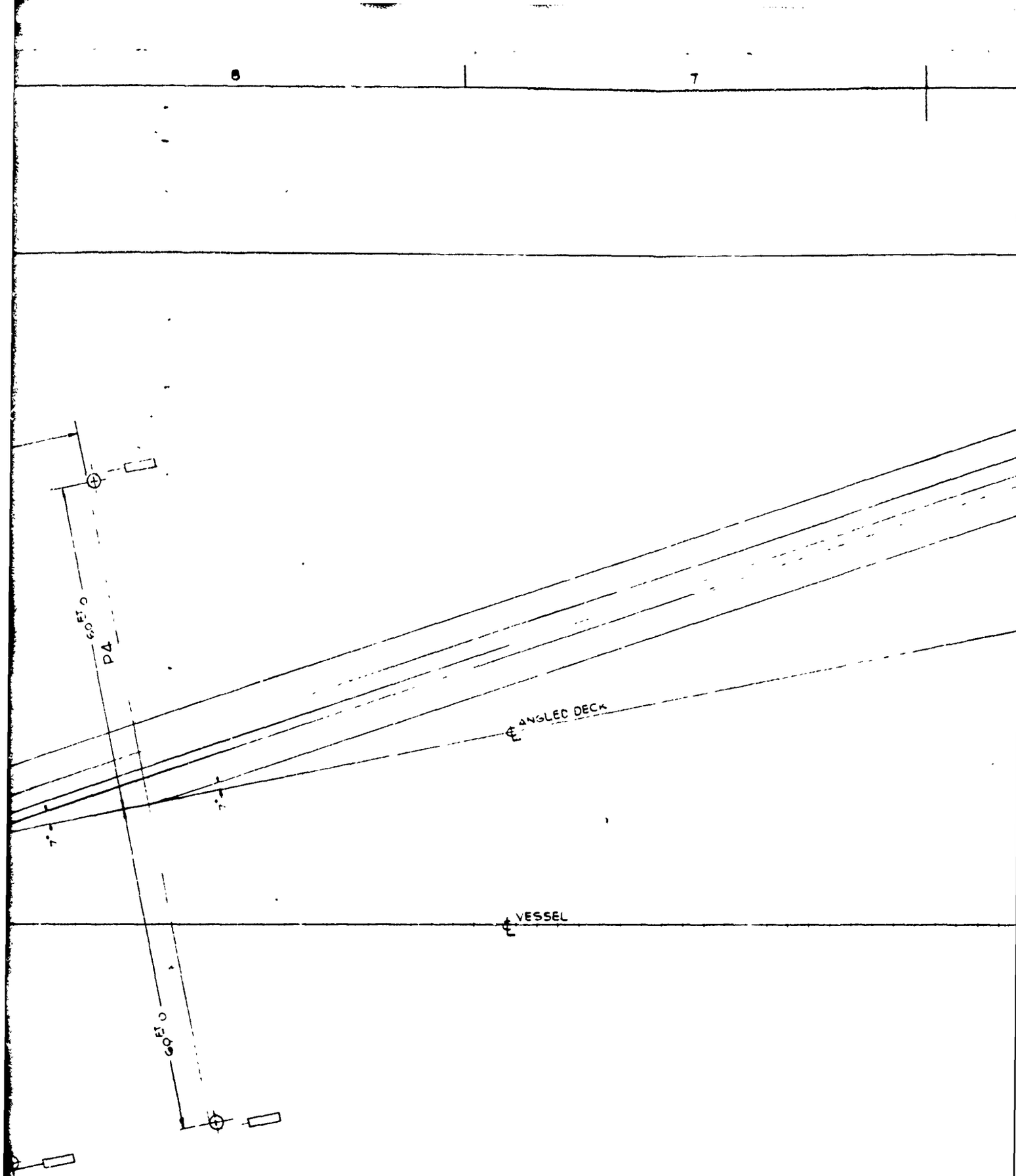
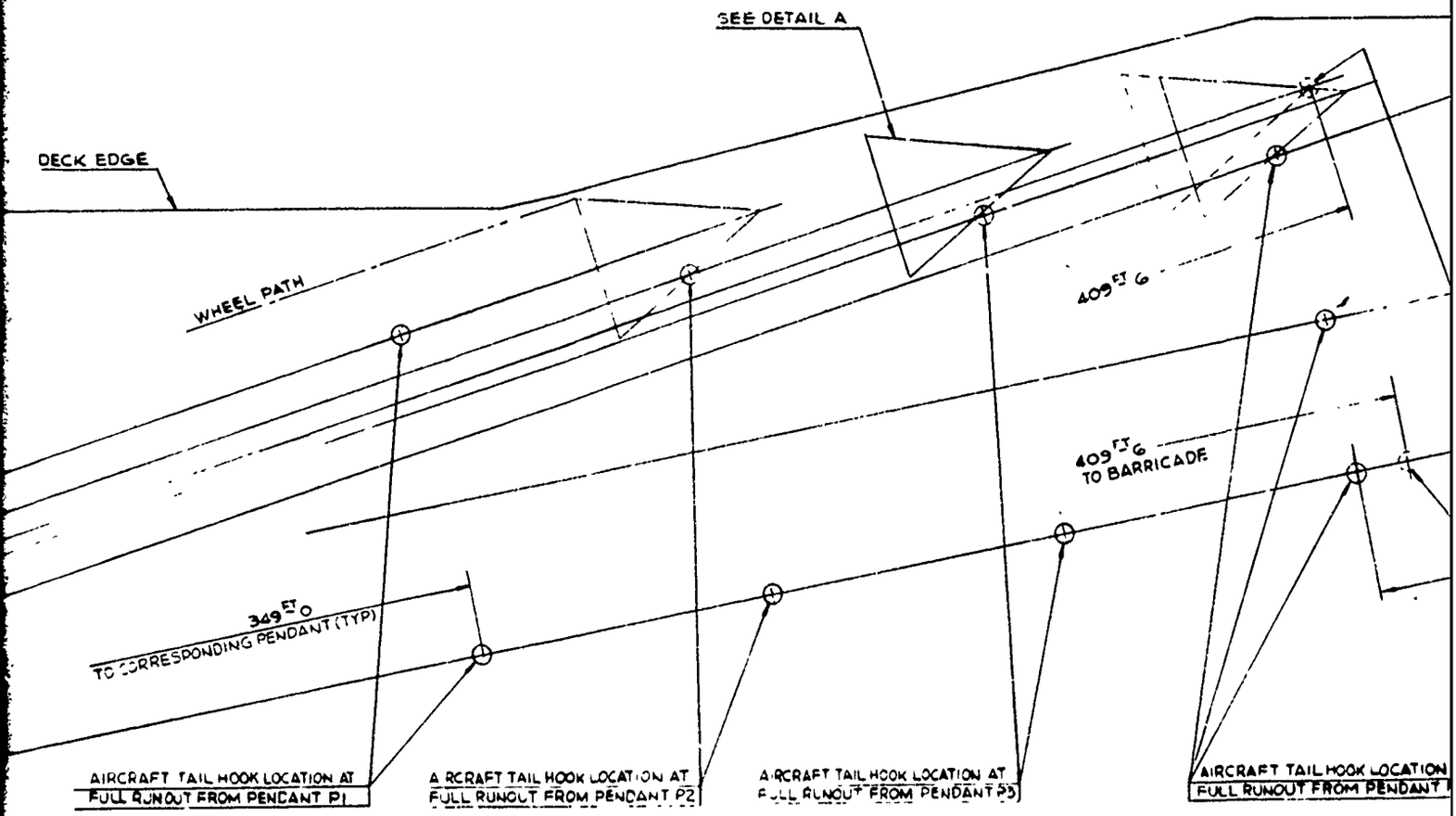
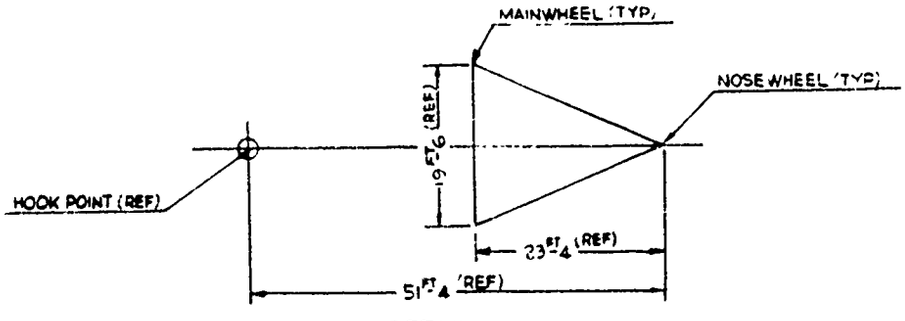


FIGURE 12

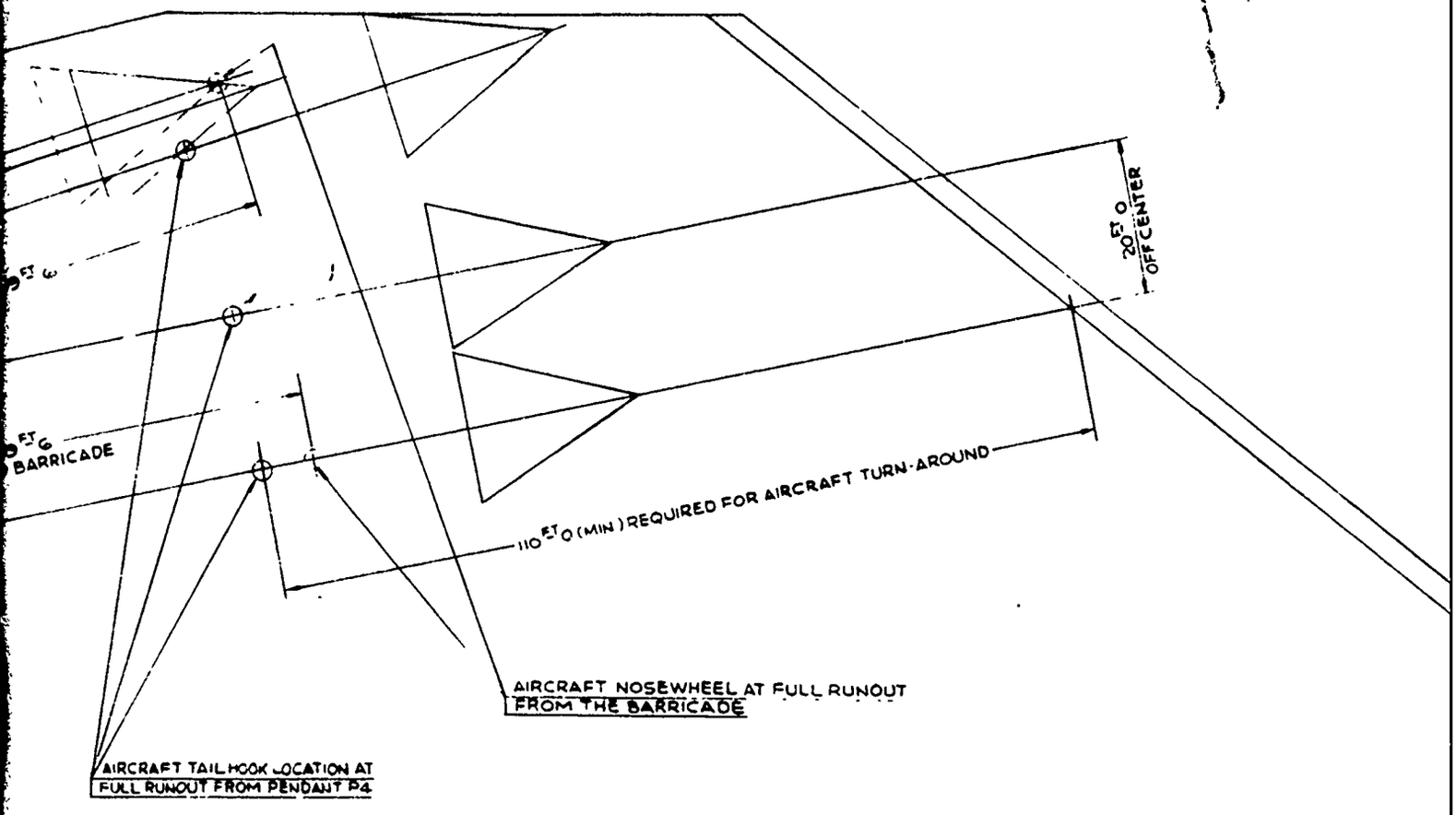

10
9
FROM AFT RAMP
FROM AFT RAMP
40FT-0
40FT-0
60FT-0
60FT-0
60FT-0
60FT-0
WP
7°
10
9


8
7
60 FT. O
P4
ANGLED DECK
VESSEL
60 FT. O
616110
8
7





DETAIL A.
E-2A WHEEL PATTERN
SEE NOTE #9


20 FT 0
OFF CENTER
FT 6
BARRICADE
110 FT 0 (MIN) REQUIRED FOR AIRCRAFT TURN-AROUND
AIRCRAFT NOSEWHEEL AT FULL RUNOUT
FROM THE BARRICADE
AIRCRAFT TAIL HOOK LOCATION AT
FULL RUNOUT FROM PENDANT P4

NOTES:

1. THIS DRAWING SHOWS THE RESULTS OF THE ARRESTING GEAR ARRANGEMENT EVALUATION FOR FUTURE AIRCRAFT CARRIERS. THIS STUDY WAS MADE UTILIZING TWO BASIC AIRCRAFT LANDING CRITERIA:
   A. SHOWING LANDINGS APPLIED PARALLEL TO THE ANGLED DECK CENTERLINE, TWENTY FEET OFF-CENTER TO THE PORT
   B. SHOWING LANDING APPLIED ON-CENTER-ANGLED TO THE PORT. THE YAW ANGLE WHICH SAFELY ACCOMMODATES ARRESTMENTS FOR ALL PENDANTS, AND THE BARRICADE, IS THE ANGLE OF 7°, AS SHOWN.
2. PENDANT AND BARRICADE ENGINES ARE MARK 7 MOD 3 PENDANT ENGINE RAM TRAVEL IS 183 INCHES (LONG STROKE CAM). THE BARRICADE ENGINE RAM TRAVEL IS 100 INCHES (SHORT STROKE CAM)
3. THE E-2A AIRCRAFT WHEEL PATTERN SHOWN IN DETAIL 'A' REPRESENTS THE CRITICAL LIMITS OF AIRCRAFT PLACEMENTS AT THE COMPLETION OF RUNOUT. THE E-2A IS THE MOST CRITICAL EXPECTED FOR PRESENT OR NEAR FUTURE CARRIER SUITABILITY

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVED

NEXT ASSEMBLY	QTY REQD	PART NUMBER	DESCRIPTION	STOCK	MATERIAL	SPECIFICATION
			LIST OF MATERIALS			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± — ±.005 ±½°
THESE DOCUMENTS ALSO ARE A PART OF THIS DRAWING

MECHANICAL FINISH SURFACE ROUGHNESS IN MICROINCHES
✓ = SURFACE ROUGHNESS IN ACCORDANCE WITH ASA B46

DRAWN	L. CALHOUN	5 MAY 69
CHECKED		5 MAY 69
MATERIAL	—	—
ANALYZED	—	—
SUPERVISOR		7/4/69
APPROVED		14 JUL 69
APPROVED		DATE

DESIGNED FOR MK 7 MOD 3
REF

ENGINEERING DEPARTMENT (SE)
NAVAL AIR ENGINEERING CENTER PHILA PA 19112

TITLE
FLIGHT DECK STUDY
MK 7 MOD 3 ARRESTING GEAR

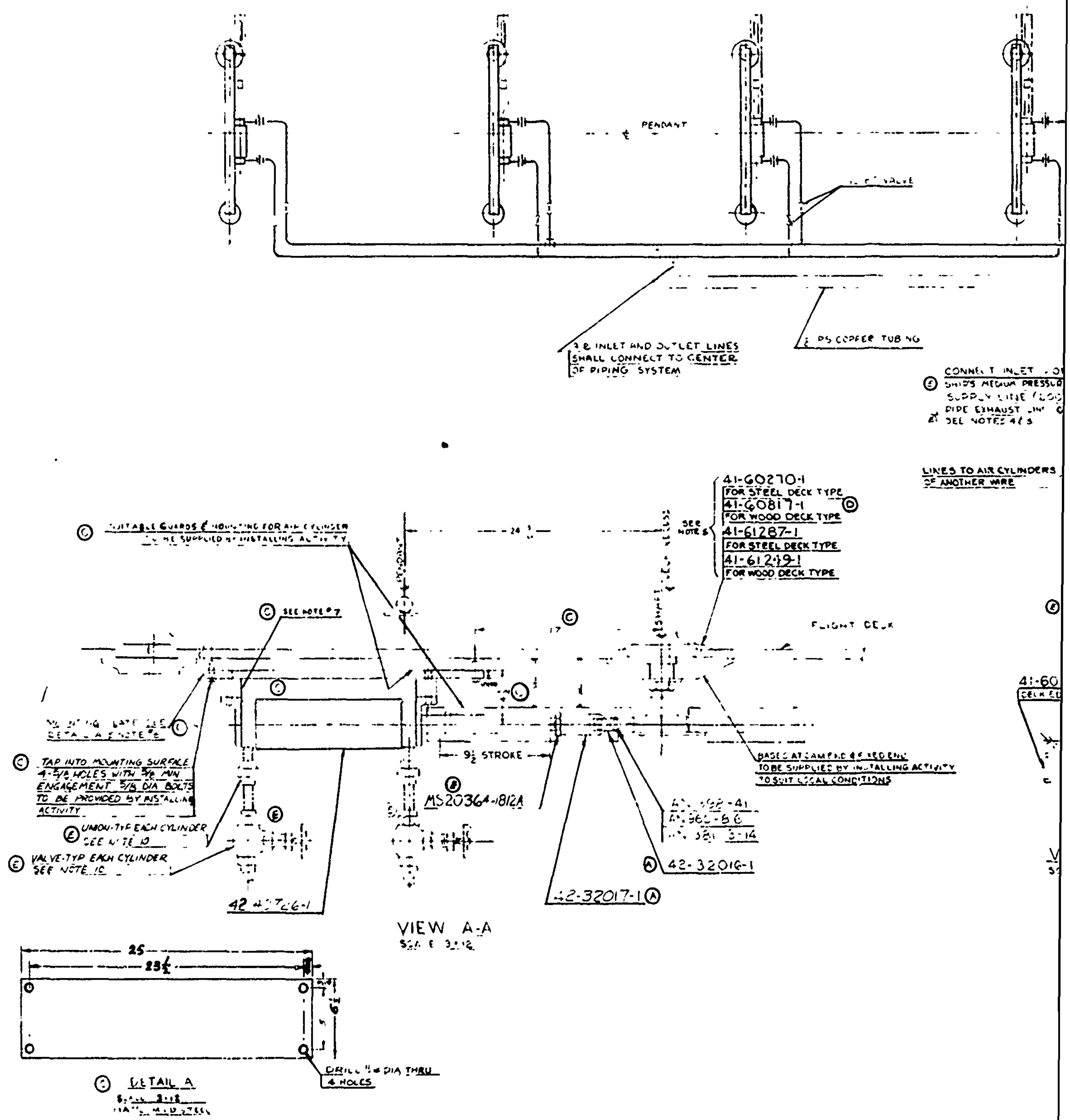
SIZE H | CODE IDENT NO 80020 | DRAWING NO. 616110

SCALE 1/8 | SHEET

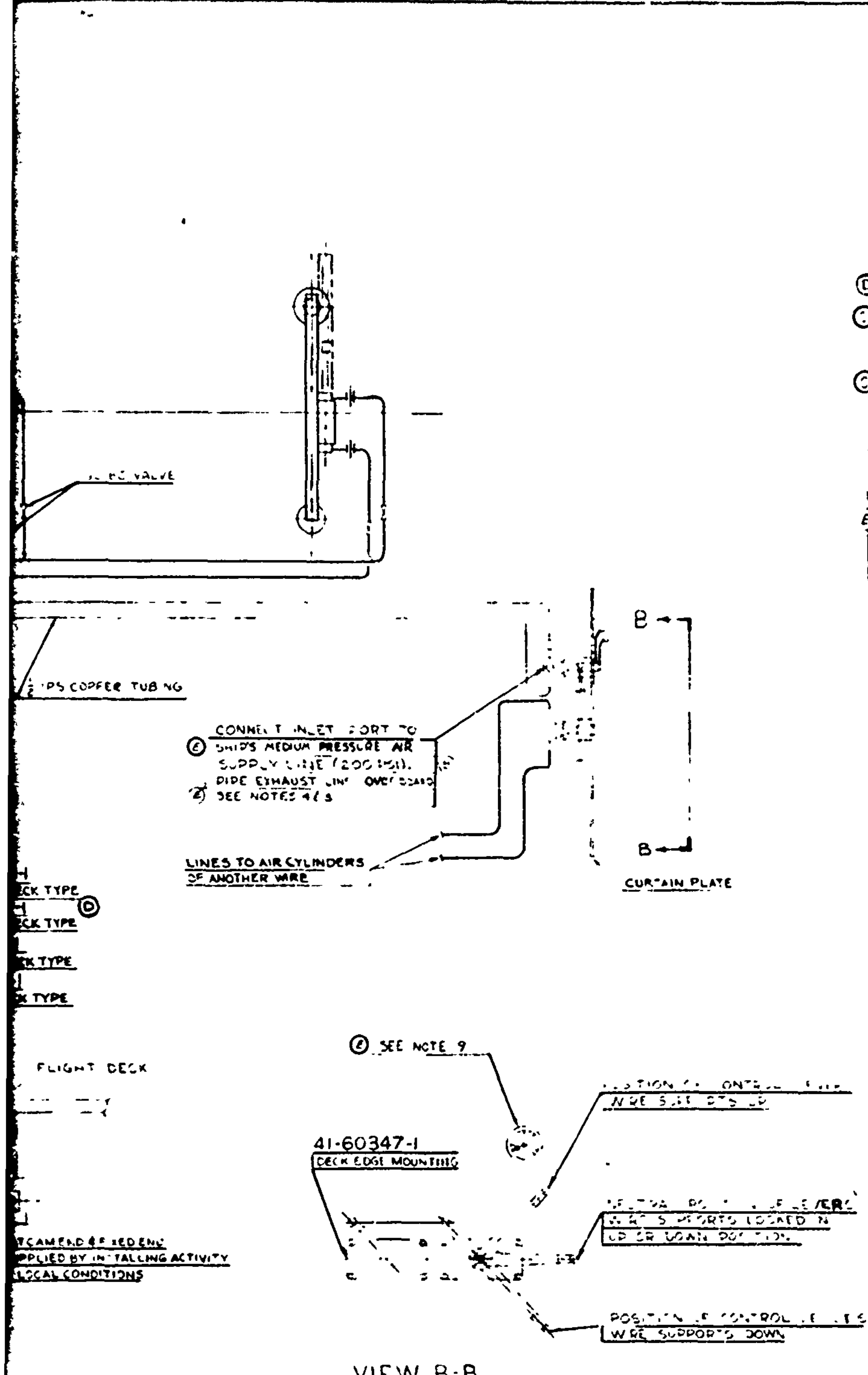
CLASSIFICATION OF CHARACTERISTICS
CRITICAL — C TO C
MAJOR — M TO M
MINOR — ALL OTHER CHARACTERISTICS

616110

FIGURE



PENDANT
SHALL CONNECT TO CENTER
OF PIPING SYSTEM
LINES TO AIR CYLINDERS
OF ANOTHER WIRE
41-60270-1
FOR STEEL DECK TYPE
41-60817-1
FOR WOOD DECK TYPE
41-61287-1
FOR STEEL DECK TYPE
41-61249-1
FOR WOOD DECK TYPE
SEE NOTE 5
SEE NOTE 7
FLIGHT DECK
9½ STROKE
MS20364-1812A
TAP INTO MOUNTING SURFACE
TO BE PROVIDED BY INSTALLING
ACTIVITY
TO BE SUPPLIED BY INSTALLING ACTIVITY
VALVE-TYP EACH CYLINDER
42-32016-1
42-32017-1
VIEW A-A
25
23½
DETAIL A
4 HOLES



VIEW B-B
SCALE 1½ = 12

NOTES

1. THIS DRAWING SHOWS A TYPICAL INSTALLATION OF ARRESTING GEAR WIRE SUPPORT AND DOUBLE CONTROLS WITH NEW DUAL CYLINDER TO OPERATE CAM FOR EACH WIRE SUPPO[RT] NUMBERS OF ALL ITEMS REFERRED TO ARE NAVAL AIRCRAFT FACTORY DRAWINGS
2. ARRANGEMENT, QUANTITY AND TYPE OF ALL ITEMS SHALL BE INSTALLED UNDE[R] COGNIZANCE OF THE INSTALLING ACTIVITY TO SUIT LOCAL CONDITIONS
3. NAME PLATES SHOWING WIRE UP, NEUTRAL AND WIRE DOWN, AND STOPS FOR LIMITING POSITION OF LEVERS, ALSO NAME PLATES DESIGNATING NUMBER OF WIRE CONTROLLED BY EACH LEVER SHALL BE FURNISHED BY THE INSTALLING ACTIVITY
4. INLET LINES SHALL BE PROVIDED BY THE INSTALLING ACTIVITY WITH SHUT OFF VALVE AND SUITABLE STRAINER TO PREVENT FOREIGN MATTER OR EXCESSIVE MOISTURE FROM ENTERING PIPING SYSTEM
5. (D) FOR NEW INSTALLATIONS USE WIRE SUPPORT DWGS 4[illegible] AND 4[illegible] FOR EXISTING INSTALLATIONS USE WIRE SUPPORT DWGS 4[illegible] AND [illegible] 817
6. (C) MOUNTING PLATE IS INTENDED TO PERMIT INTERCHANGEABLE MOUNTING OF AIR CYLINDERS FROM VARIOUS MANUFACTURERS WHOSE DIMENSIONS FALL WITHIN THE LIMITS SHOWN ON NAF DWG NO 42-4 7261 THE PLATE MAY HAVE TO HAVE ADDITIONAL HOLES TAPPED IN IT TO ACCOMMODATE SOME REPLACEMENT CYLINDERS
7. (C) PROVIDE SPACERS AS REQUIRED BETWEEN AIR CYLINDER AND MOUNTING PLATE DRILL THRU SPACERS AND TAP INTO MOUNTING PLATE TO MATCH LOCATION AND SIZE OF MOUNTING HOLES IN AIR CYLINDER MOUNT AIR CYLINDER ON PLATE CENTERLINE, INSTALLING ACTIVITY SHALL SUPPLY SPACERS
8. *THE 200 PSI AIR SUPPLY PROVIDED BY INSTALLING ACTIVITY MUST NOT DROP BELOW 175 PSI MAXIMUM REQUIREMENT IS 225 PSI THIS AIR REQUIREMENT MUST BE PIPED FROM A MEDIUM PRESSURE AIR LINE WITH AN AIR STATION INSTALLED TO PROVIDE THE ABOVE AIR REQUIREMENTS*
9. (E) *THE INSTALLING ACTIVITY SHALL PROVIDE AN AIR PRESSURE GAGE WITH A RANGE OF 0 TO 300 PSI CONNECTED TO THE WIRE SUPPORT AIR SUPPLY MANIFOLD, LOCATED AT THE ARRESTING GEAR CONTROL PANEL*
10. *VALVES AND RELATED HARDWARE TO BE FURNISHED BY THE INSTALLING ACTIVITY*
11. *THIS DRAWING IS TO BE USED IN CONJUNCTION WITH MARK 7 ARRESTING GEAR SERVICE CHANGE No 264 AND No 265*

REFERENCE PLANS

1. WIRE SUPPORT-ASSY-(STEE[L]
2. WIRE SUPPORT-ASSY-(WOO[D]
3. CONTROLS-DECK EDGE-AS[SY]
4. AIR CYLINDER-ASSY
5. WIRE SUPPORT-ASSY (STEEL
6. (D) WIRE SUPPORT-ASSY (WOOD

CLASSIFICATION OF CHARACTERISTICS	
CRITICAL	C TO C
MAJOR	M TO M
MINOR	ALL OTHER CHARACTERISTICS

GRAY

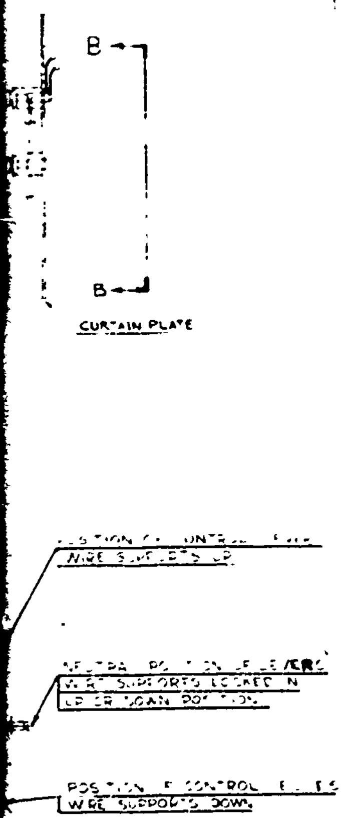
LIST 250,2

2

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	[illegible]	[illegible]	[illegible]
B	[illegible]	[illegible]	[illegible]
C	[illegible] CHANGED MOUNTING FOR AIR CYLINDER. SEE REVISION SLIP. ADDED DETAIL A [illegible]. ADDED NOTES 6, 7	[illegible] 60	[illegible]
D	N R N CL 'R' CHG [illegible] NOTE 5 - 41-60817 WAS 4-60564 FLEMING	[illegible]	[illegible]
E	SEE REVISION NOTICE R ULAK	[illegible]	[illegible]

NOTES

1. THIS DRAWING SHOWS A TYPICAL INSTALLATION OF ARRESTING GEAR WIRE SUPPORT AND DOUBLE CONTROLS WITH [illegible] DUAL [illegible] CYLINDER TO OPERATE CAM FOR EACH WIRE SUPPORT. NUMBERS [illegible] REFERRED TO ARE NAVAL AIRCRAFT FACTORY DRAWINGS
2. ARRANGEMENT, QUANTITY AND TYPE OF ALL ITEMS SHALL BE INSTALLED UNDER COGNIZANCE OF THE INSTALLING ACTIVITY TO SUIT LOCAL CONDITIONS
3. NAME PLATES SHOWING WIRE UP, NEUTRAL AND WIRE DOWN, AND STOPS FOR LIMITING POSITION OF LEVER, ALSO NAME PLATES DESIGNATING NUMBER OF WIRE CONTROLLED BY EACH LEVER SHALL BE FURNISHED BY THE INSTALLING ACTIVITY
4. INLET LINES SHALL BE PROVIDED BY THE INSTALLING ACTIVITY WITH SHUT OFF VALVE AND SUITABLE STRAINER TO PREVENT FOREIGN MATTER OR EXCESSIVE MOISTURE FROM ENTERING PIPING SYSTEM
5. (D) FOR NEW INSTALLATIONS USE WIRE SUPPORT DWGS 4[illegible] AND 4[illegible] FOR EXISTING INSTALLATIONS USE WIRE SUPPORT DWGS 4[illegible] AND [illegible] 817
6. (C) MOUNTING PLATE IS INTENDED TO PERMIT INTERCHANGEABLE MOUNTING OF AIR CYLINDERS FROM VARIOUS MANUFACTURERS WHOSE DIMENSIONS FALL WITHIN THE LIMITS SHOWN ON NAEF DWG Nº 42-4 726; THE PLATE MAY HAVE TO HAVE ADDITIONAL HOLES TAPPED IN IT TO ACCOMMODATE SOME REPLACEMENT CYLINDERS
7. (C) PROVIDE SPACERS AS REQUIRED BETWEEN AIR CYLINDER AND MOUNTING PLATE. DRILL THRU SPACERS AND TAP INTO MOUNTING PLATE TO MATCH LOCATION AND SIZE OF MOUNTING HOLES IN AIR CYLINDER. MOUNT AIR CYLINDER ON PLATE CENTERLINE. INSTALLING ACTIVITY SHALL SUPPLY SPACERS
8. *THE 200 PSI AIR SUPPLY PROVIDED BY INSTALLING ACTIVITY MUST NOT DROP BELOW 175 PSI. MAXIMUM REQUIREMENT IS 225 PSI. THIS AIR REQUIREMENT MUST BE PIPED FROM A MEDIUM PRESSURE AIR LINE WITH AN AIR STATION INSTALLED TO PROVIDE THE ABOVE AIR REQUIREMENTS*
9. (E) *THE INSTALLING ACTIVITY SHALL PROVIDE AN AIR PRESSURE GAGE WITH RANGE OF 0 TO 300 PSI CONNECTED TO THE WIRE SUPPORT AIR SUPPLY MANIFOLD, LOCATED AT THE ARRESTING GEAR CONTROL PANEL*
10. *VALVES AND RELATED HARDWARE TO BE FURNISHED BY THE INSTALLING ACTIVITY*
11. *THIS DRAWING IS TO BE USED IN CONJUNCTION WITH MARK 7 ARRESTING GEAR SERVICE CHANGE No 264 AND No 265*



REFERENCE PLANS

1. WIRE SUPPORT-ASSY-(STEEL DECK TYPE) — 41-6124[illegible]
2. WIRE SUPPORT-ASSY-(WOOD DECK TYPE) — 41-6124[illegible]
3. CONTROLS-DECK EDGE-ASSY — 41-6034[illegible]
4. AIR CYLINDER-ASSY — 42-40726
5. WIRE SUPPORT-ASSY (STEEL DECK TYPE) — 41-60[illegible]
6. (E) WIRE SUPPORT ASSY (WOOD DECK TYPE) — 41-60[illegible]

CLASSIFICATION OF CHARACTERISTICS		
CRITICAL	C	TO C
MAJOR	M	TO M
MINOR	ALL OTHER CHARACTERISTICS	

GRAY / WEIL

WIRE SUPPORT & CONTROLS
INDIVIDUAL CYLINDER TYPE
TYPICAL INSTALLATION

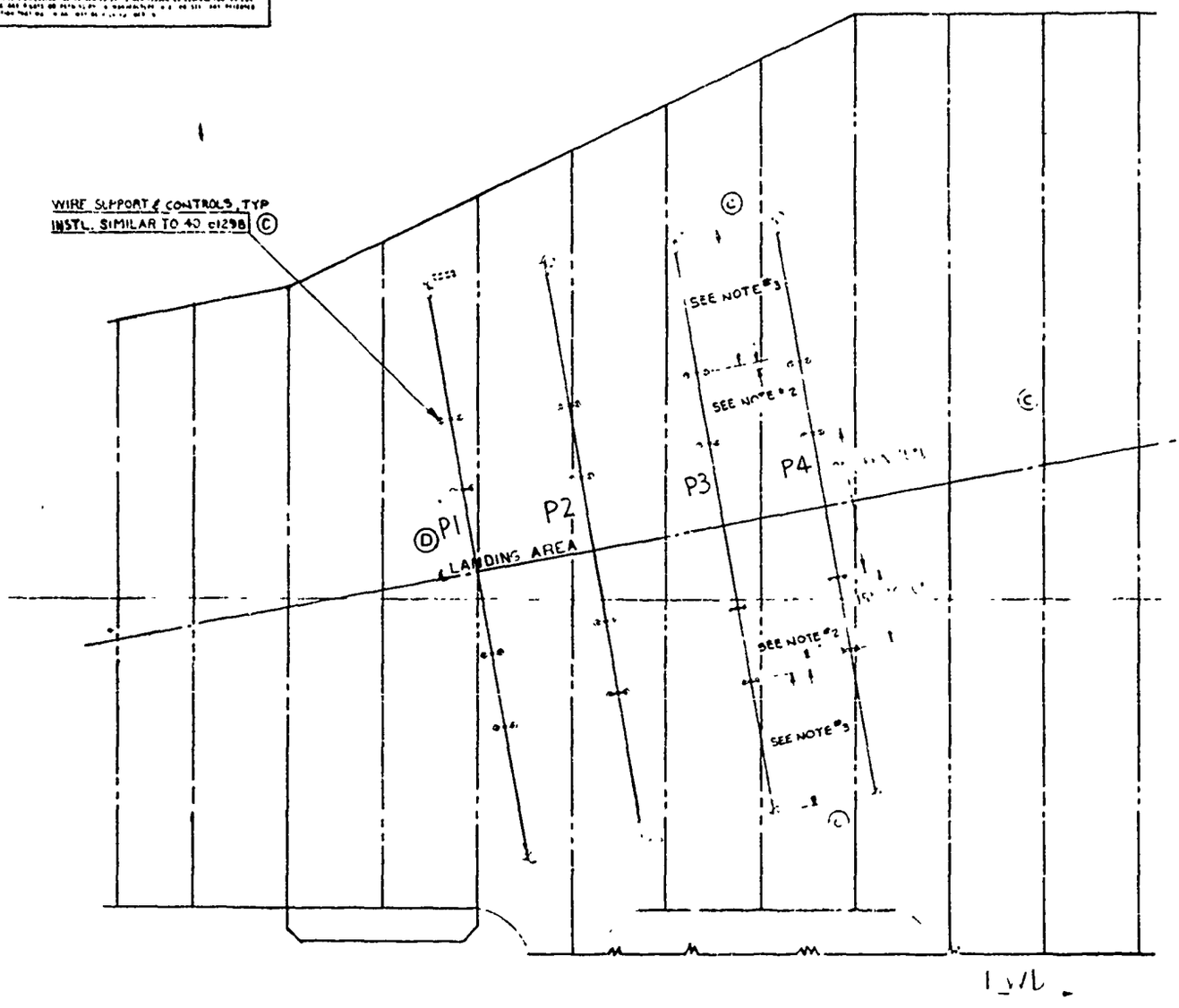
NAVAL AIRCRAFT FACTORY

40-61298

LIST 250, 250A, 250-2, 251, 252

40-61298

FIGURE 14


WIRE SUPPORT & CONTROLS, TYP
INSTL. SIMILAR TO 40 e1298 ©
SEE NOTE #3
SEE NOTE #2
P1
P2
P3
P4
LANDING AREA
SEE NOTE #2
SEE NOTE #3

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	ON DWG IN DETAIL 'A' [illegible] WAS [illegible] ON [illegible] RECESS IN DECK, ADDED [illegible] WELD, REMOVED [illegible] DIM. DELETED [illegible] AN936-C316 E CASEY	[illegible]	[illegible]
(B)	ON DWG IN DETAIL 'A' 404932-1 WAS 404724-1, ADDED [illegible] DIM E CASEY	[illegible]	[illegible]
(C)	ON DWG NOTE "WIRE SUPPORTS AND CONTROLS TYP INSTL SIMILAR TO 40-G1296" WAS "WIRE SUPPORT INSTL SIMILAR TO 40 G0348". REMOVED OUTBOARD WIRE SUPPORTS FROM EACH PENDANT POSITION, B/3 #1 & B/3 #2 AND DETAIL A. IN NOTES IN NOTE 1 [illegible] WAS [illegible] ADDED NOTE #4. IN TITLE BLOCK TITLE WAS "INSTALLATION DATA WIRE SUPPORTS & DECK ANCHORS [illegible] CLASS" CALEM [illegible]	[illegible]	[illegible]
(D)	SEE REVISION NOTICE [illegible] BARBELLA	[illegible]	[illegible]

NOTES

(C) 1 PROVIDE 25" MIN TO 30" APPROX [illegible]
2 STAGGER WIRE SUPPORTS APPROX 18IN APART AT ALTERNATE PENDANT POSITIONS
(C) 3 [illegible] LESS THAN 20" [illegible] FROM THE [illegible]
(C) 4 THE NUMBER AND ARRANGEMENT OF PENDANT POSITIONS, AND WIRE SUPPORTS TO BE UNDER THE COGNIZANCE OF NAV AIR AND SUBJECT TO APPROVAL OF NAEC

502942 INSTALLATION DATA

MATERIAL

DRAWN	F J GULD	5-23-56
CHECKED	HENACKER	[illegible]
	[illegible]	[illegible]
	[illegible]	[illegible]
	[illegible]	[illegible]
	KAUFMAN	[illegible]

INSTALLATION DATA
WIRE SUPPORTS
ARMORED DECK CARRIERS (C)
MK 7 MOD 1, 2 & 3 (D)
NONE

NAVAL AIR [illegible] FACTORY

502942

CODE [illegible]

502942

Flight Deck Arresting Gear And Barricade Configuration Criteria For Mark 7 Mod 3 Arresting Engine

NAEC-ENG-7593
AIRTASK 00480
9126 - 2293

This report presents information regarding flight deck arresting gear & barricade configuration criteria for the Mk. 7 Mod. 3 arresting engines and is provided for use in the preparation of installation plans for new aircraft carriers or on present carriers planning utilization of Mk. 7 Mod. 3 arresting gear.

Flight Deck Arresting Gear And Barricade Configuration Criteria For Mark 7 Mod 3 Arresting Engine

NAEC-ENG-7593
AIRTASK 00480
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9126 - 2293

This report presents information regarding flight deck arresting gear & barricade configuration criteria for the Mk. 7 Mod. 3 arresting engines and is provided for use in the preparation of installation plans for new aircraft carriers or on present carriers planning utilization of Mk. 7 Mod. 3 arresting gear.

UNCLASSIFIED

Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1 ORIGINATING ACTIVITY *(Corporate author)* Naval Air Engineering Center, Phila., Pa. 19112	2a. REPORT SECURITY CLASSIFICATION Unclassified 2b. GROUP None

3. REPORT TITLE

Flight Deck Arresting Gear And Barricade Configuration Criteria For Mark 7 Mod 3 Arresting Engine

4. DESCRIPTIVE NOTES *(Type of report and inclusive dates)*

None

5. AUTHOR(S) *(First name, middle initial, last name)*

Charles Glessner / Salvatore T. Cane

6 REPORT DATE	7a. TOTAL NO OF PAGES 30	7b. NO. OF REFS None
8a. CONTRACT OR GRANT NO. N00156-69-A-0017 b. PROJECT NO. AIRTASK 00480-9126-2293 c. d.	9a. ORIGINATOR'S REPORT NUMBER(S) NAEC-ENG-7593 9b. OTHER REPORT NO(S) *(Any other numbers that may be assigned this report)* None	

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11 SUPPLEMENTARY NOTES None	12 SPONSORING MILITARY ACTIVITY Naval Air Systems Command

13 ABSTRACT

This report presents information regarding flight deck arresting gear and barricade configuration criteria for the Mark 7 Mod 3 arresting engines and is provided for use in the preparation of installation plans for new aircraft carriers or on present carriers planning utilization of the Mark 7 Mod 3.

DD FORM 1 NOV 68 1473 (PAGE 1)

S/N 0101-807-6801

Unclassified

Security Classification

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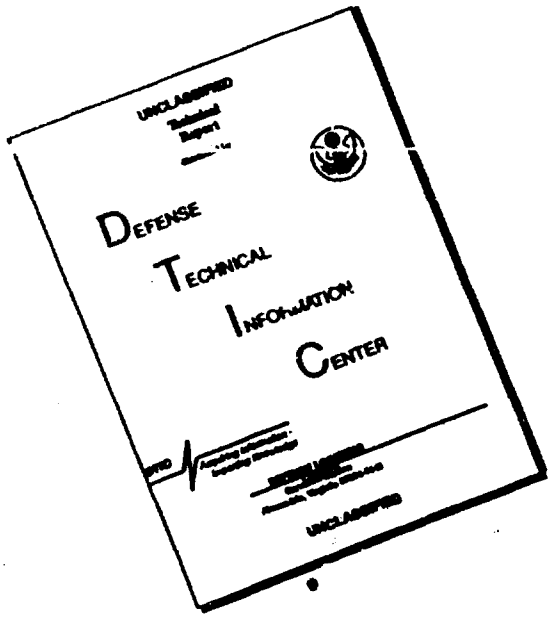

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